Nikon

DIGITAL CAMERA

D3000

User's Manual

En

Picture Controls

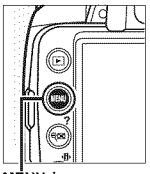
Nikon's unique Picture Control system makes it possible to share image processing settings, including sharpening, contrast, saturation, and hue, among compatible devices and software.

Selecting a Picture Control

The camera offers six Picture Controls. In **P**, **S**, **A**, and **M** modes, you can choose a Picture Control according to the subject or type of scene (in other modes, the camera selects a Picture Control automatically).

1 Display Picture Controls.

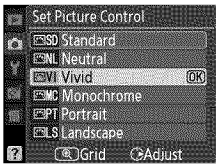
To display the menus, press the **MENU** button. Highlight **Set Picture Control** in the shooting menu and press ▶ to display a list of Picture Controls.



MENU *button*

2 Choose a Picture Control.

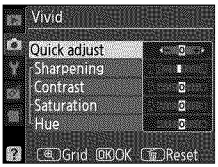
Highlight one of the following options and press ⊛.



Option	Description
SD **Standard**	Standard processing for balanced results. Recommended for most situations.
NL **Neutral**	Minimal processing for natural results. Choose for photographs that will later be extensively processed or retouched.
VI **Vivid**	Pictures are enhanced for a vivid, photoprint effect. Choose for photographs that emphasize primary colors.
MC **Monochrome**	Take monochrome photographs.
PT **Portrait**	Process portraits for skin with natural texture and a rounded feel.
LS **Landscape**	Produces vibrant landscapes and cityscapes.

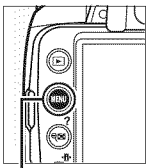
Modifying Picture Controls

Picture Controls can be modified to suit the scene or the user's creative intent. Choose a balanced combination of settings using **Quick adjust**, or make manual adjustments to individual settings.



1 Display the Picture Control menu.

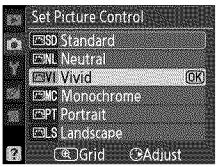
To display the menus, press the **MENU** button. Highlight **Set Picture Control** in the shooting menu and press ▶.



MENU *button*

2 Select a Picture Control.

Highlight the desired Picture Control and press ▶.



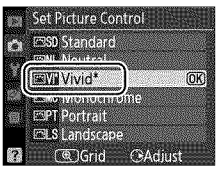
3 Adjust settings.

Press ▲ or ▼ to highlight the desired setting and press ◀ or ▶ to choose a value (🕮 89). Repeat this step until all settings have been adjusted, or select **Quick adjust** to choose a preset combination of settings. Default settings can be restored by pressing the 🗑 button.

4 Press ⓚ.

Modifications to Original Picture Controls

Picture Controls that have been modified from default settings are indicated by an asterisk ("*").



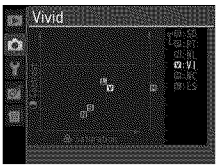
■■ Picture Control Settings

Option		Description
Quick adjust		Choose from options between **–2** and **+2** to reduce or exaggerate the effect of the selected Picture Control (note that this resets all manual adjustments). For example, choosing positive values for **Vivid** makes pictures more vivid. Not available with **Neutral** or **Monochrome** Picture Controls.
Manual adjustments (all Picture Controls)	**Sharpening**	Control the sharpness of outlines. Select **A** to adjust sharpening automatically according to the type of scene, or choose from values between **0** (no sharpening) and **9** (the higher the value, the greater the sharpening).
	Contrast	Select **A** to adjust contrast automatically according to the type of scene, or choose from values between **–3** and **+3** (choose lower values to prevent highlights in portrait subjects from being "washed out" in direct sunlight, higher values to preserve detail in misty landscapes and other low-contrast subjects). Not available when Active D-Lighting (🕮 64) is on; reset if Active D-Lighting is activated after value is changed.
Manual adjustments (non-monochrome only)	**Saturation**	Control the vividness of colors. Select **A** to adjust saturation automatically according to the type of scene, or choose from values between **–3** and **+3** (lower values reduce saturation and higher values increase it).
	Hue	Choose negative values (to a minimum of **–3**) to make reds more purple, blues more green, and greens more yellow, positive values (up to **+3**) to make reds more orange, greens more blue, and blues more purple.
Manual adjustments (monochrome only)	**Filter effects**	Simulate the effect of color filters on monochrome photographs. Choose from **Off** (the default setting), yellow, orange, red, and green (🕮 90).
	Toning	Choose the tint used in monochrome photographs from **B&W** (black-and-white), **Sepia**, **Cyanotype** (blue-tinted monochrome), **Red**, **Yellow**, **Green**, **Blue Green**, **Blue**, **Purple Blue**, **Red Purple** (🕮 90).

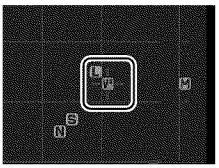
✓ "A" (Auto)
Results for auto contrast and saturation vary with exposure and the position of the subject in the frame.

The Picture Control Grid

Pressing the ⊕ button in Step 3 displays a Picture Control grid showing the contrast and saturation for the selected Picture Control in relation to the other Picture Controls (only contrast is displayed when **Monochrome** is selected). Release the ⊕ button to return to the Picture Control menu.

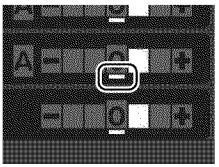


The icons for Picture Controls that use auto contrast and saturation are displayed in green in the Picture Control grid, and lines appear parallel to the axes of the grid.



Previous Settings

The line under the value display in the Picture Control setting menu indicates the previous value for the setting. Use this as a reference when adjusting settings.



Filter Effects (Monochrome Only)

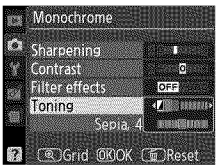
The options in this menu simulate the effect of color filters on monochrome photographs. The following filter effects are available:

Option		Description
Y	Yellow	Enhances contrast. Can be used to tone down the brightness of the sky in landscape photographs. Orange produces more contrast than yellow, red more contrast than orange.
O	Orange	
R	Red	
G	Green	Softens skin tones. Can be used for portraits.

Note that the effects achieved with **Filter effects** are more pronounced than those produced by physical glass filters.

Toning (Monochrome Only)

Pressing ▼ when **Toning** is selected displays saturation options. Press ◀ or ▶ to adjust saturation. Saturation control is not available when **B&W** (black-and-white) is selected.



More on Playback

Full-Frame Playback

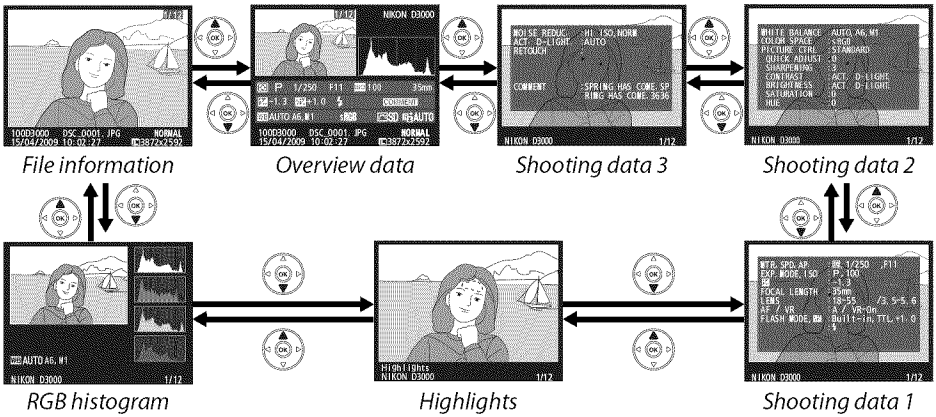
To play photographs back, press the ▶ button. The most recent photograph will be displayed in the monitor.

▶ *button*

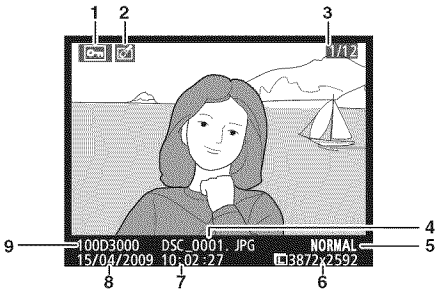
To	Use	Description
View additional photographs		Press ▶ to view photographs in order recorded, ◀ to view photographs in reverse order.
View photo information		Press ▲ or ▼ to view information about current photograph (🕮 92).
View thumbnails		See page 97 for more information on the thumbnail display.
Zoom in on photograph		See page 99 for more information on playback zoom.
Delete images		Confirmation dialog will be displayed. Press 🗑 again to delete photo.
Change protect status		To protect image, or to remove protection from protected image, press (AE-L/AF-L) button (🕮 100).
Return to shooting mode		Monitor will turn off. Photographs can be taken immediately.
Display menus	MENU	See page 117 for more information.
Create retouched copy or play stop-motion movie		Create retouched copy of current photograph (🕮 140). If current picture is marked with 🎬 icon to show that it is a stop-motion movie, pressing ⓞ starts movie playback (🕮 153).

Photo Information

Photo information is superimposed on images displayed in full-frame playback. Press ▲ or ▼ to cycle through photo information as shown below. Note that shooting data, RGB histograms, and highlights are only displayed if corresponding option is selected for **Display mode** (🕮 118).

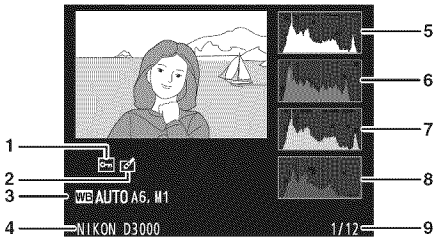


■■ File Information



1	Protect status 100
2	Retouch indicator 141
3	Frame number/total number of images
4	File name 51
5	Image quality 50
6	Image size 52
7	Time of recording 18
8	Date of recording 18
9	Folder name 138

■■ RGB Histogram *

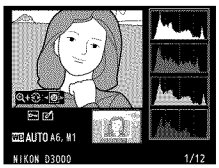


1 Protect status 100
2 Retouch indicator 141
3 White balance 80
White balance fine-tuning 82
Preset manual 83
4 Camera name
5 Histogram (RGB channel). In all histograms, horizontal axis gives pixel brightness, vertical axis number of pixels.
6 Histogram (red channel)
7 Histogram (green channel)
8 Histogram (blue channel)
9 Frame number/total number of images

* Displayed only if **RGB histogram** is selected for **Display mode** (🕮 118).

Playback Zoom

To zoom in on the photograph when the histogram is displayed, press 🔍. Use the 🔍 and 🔍 buttons to zoom in and out and scroll the image with the multi selector. The histogram will be updated to show only the data for the portion of the image visible in the monitor.



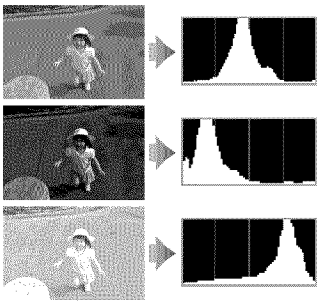
Histograms

Camera histograms are intended as a guide only and may differ from those displayed in imaging applications. Some sample histograms are shown below:

If the image contains objects with a wide range of brightnesses, the distribution of tones will be relatively even.

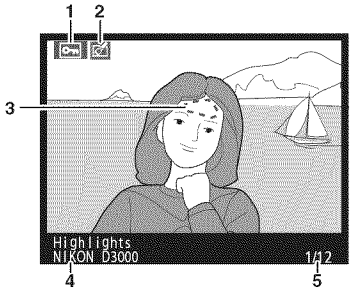
If the image is dark, tone distribution will be shifted to the left.

If the image is bright, tone distribution will be shifted to the right.



Increasing exposure compensation shifts the distribution of tones to the right, while decreasing exposure compensation shifts the distribution to the left. Histograms can provide a rough idea of overall exposure when bright ambient lighting makes it difficult to see photographs in the monitor.

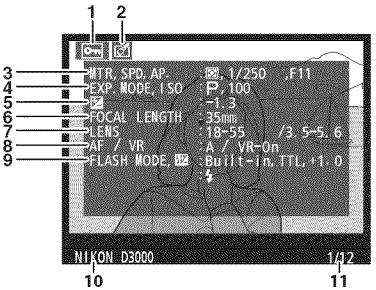
■■ *Highlights**



1 Protect status 100
2 Retouch indicator 141
3 Image highlights
4 Camera name
5 Frame number/total number of images

* Displayed only if **Highlights** is selected for **Display mode** (🕮 118). Blinking areas indicate highlights.

■■ *Shooting Data Page 1*[1]

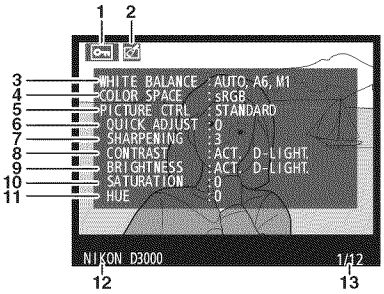


1 Protect status 100
2 Retouch indicator 141

3 Metering 74
Shutter speed 69, 71
Aperture 70, 71
4 Shooting mode 25, 30, 67
ISO sensitivity[2] 62
5 Exposure compensation 76
6 Focal length 161
7 Lens data
8 Focus mode 41, 48
Lens VR (vibration reduction)[3] 17
9 Flash mode 59
Flash compensation 78
10 Camera name
11 Frame number/total number of images

1 Displayed only if **Data** is selected for **Display mode** (🕮 118).
2 Displayed in red if photo was taken with ISO sensitivity auto control on.
3 Displayed only if VR lens is attached.

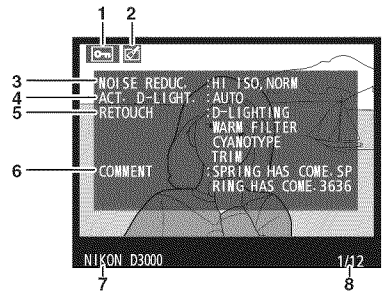
■■ Shooting Data Page 2 [1]



1 Protect status 100
2 Retouch indicator 141
3 White balance 80
White balance fine-tuning 82
Preset manual 83
4 Color space 121
5 Picture Control 87
6 Quick adjust [2] 89
Original Picture Control [3] 87
7 Sharpening 89
8 Contrast 89
9 Brightness
10 Saturation [4] 89
Filter effects [5] 89
11 Hue [4] 89
Toning [5] 89
12 Camera name
13 Frame number/total number of images

1 Displayed only if **Data** is selected for **Display mode** (□ 118).
2 **Standard**, **Vivid**, **Portrait**, and **Landscape** Picture Controls only.
3 **Neutral** and **Monochrome** Picture Controls.
4 Not displayed with monochrome Picture Controls.
5 Monochrome Picture Controls only.

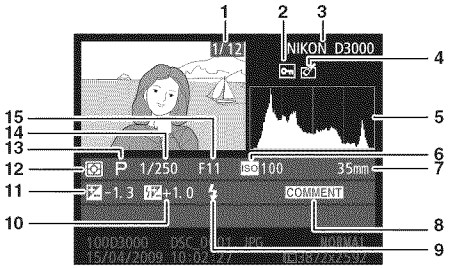
■■ Shooting Data Page 3 [1]



1 Protect status 100
2 Retouch indicator 141
3 Noise reduction 122
4 Active D-Lighting [2] 64
5 Retouch history 140
6 Image comment 128
7 Camera name
8 Frame number/total number of images

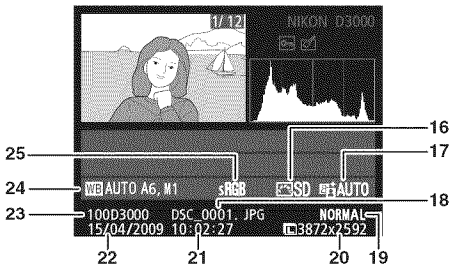
1 Displayed only if **Data** is selected for **Display mode** (□ 118).
2 **AUTO** is displayed if photo was taken with Active D-Lighting on.

Overview Data



1 Frame number/total number of images
2 Protect status 100
3 Camera name
4 Retouch indicator 141
5 Histogram showing the distribution of tones in the image (📖 93).
6 ISO sensitivity * 62
7 Focal length 161
8 Image comment indicator 128
9 Flash mode 59
10 Flash compensation 78
11 Exposure compensation 76
12 Metering 74
13 Shooting mode 25, 30, 67
14 Shutter speed 69, 71
15 Aperture 70, 71

* Displayed in red if photo was taken with ISO sensitivity auto control on.

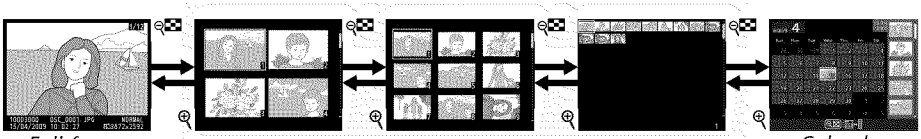


16 Picture Control 87
17 Active D-Lighting * 64
18 File name 51
19 Image quality 50
20 Image size 52
21 Time of recording 18
22 Date of recording 18
23 Folder name 138
24 White balance 80
White balance fine-tuning 82
Preset manual 83
25 Color space 121

* **AUTO** is displayed if photo was taken with Active D-Lighting on.

Thumbnail Playback

To display images in "contact sheets" of four, nine, or 72 images, press the 🔍 button.

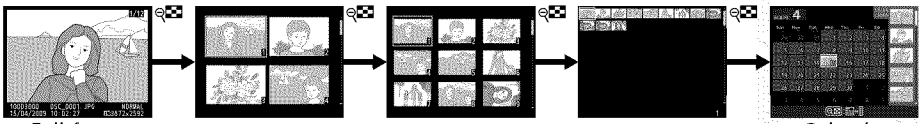


Full-frame playback — *Thumbnail playback* — *Calendar playback*

To	Use	Description
Display more images	🔍	Press 🔍 button to increase the number of images displayed.
Display fewer images	🔍	Press 🔍 button to reduce the number of images displayed. When four images are displayed, press to view highlighted image full frame.
Highlight images		Use multi selector or command dial to highlight images for full-frame playback, playback zoom (📖 99), deletion (📖 101), or protection (📖 100).
View highlighted image	OK	Press OK to display the highlighted image full frame.
Delete highlighted photo	🗑	See page 101 for more information.
Change protect status of highlighted photo	🔑 (AE-L/AF-L)	See page 100 for more information.
Return to shooting mode		Monitor will turn off. Photographs can be taken immediately.
Display menus	MENU	See page 117 for more information.

Calendar Playback

To view images taken on a selected date, press the ⊖ button when 72 images are displayed.



Full-frame playback — *Thumbnail playback* — *Calendar playback*

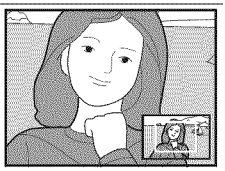
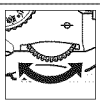
Press the ⊖ button to toggle between the date list and the list of thumbnails for the selected date. Use the multi selector to highlight dates in the date list or to highlight pictures in the thumbnail list.

The operations can be performed depend on whether the cursor is in the date list or the thumbnail list:

To	Use	Description
Toggle between date list and thumbnail list	⊖	Press ⊖ button in date list to place cursor in thumbnail list. Press again to return to date list.
Exit to thumbnail playback/Zoom in on highlighted photo	⊕	• **Date list**: Exit to 72-frame playback. • **Thumbnail list**: Press and hold ⊕ button to zoom in on highlighted picture.
Highlight dates/ Highlight images	multi selector	• **Date list**: Highlight date. • **Thumbnail list**: Highlight picture.
Toggle full frame playback	OK	• **Date list**: View first picture taken on selected date. • **Thumbnail list**: View highlighted picture.
Delete highlighted photo(s)	🗑	• **Date list**: Delete all pictures taken on selected date. • **Thumbnail list**: Delete highlighted picture (🕮 101).
Change protect status of highlighted photo	AE-L/AF-L	See page 100 for more information.
Return to shooting mode	shutter-release	Monitor will turn off. Photographs can be taken immediately.
Display menus	MENU	See page 117 for more information.

Taking a Closer Look: Playback Zoom

Press the 🔍 button to zoom in on the image displayed in full-frame playback or on the image currently highlighted in thumbnail or calendar playback. The following operations can be performed while zoom is in effect:

To	Use	Description
Zoom in or out	🔍 / 🔍	Press 🔍 to zoom in to maximum of approximately 25× (large images), 19× (medium images) or 13× (small images). Press 🔍 to zoom out. While photo is zoomed in, use multi selector to view areas of image not visible in monitor. Keep multi selector pressed to scroll rapidly to other areas of frame. Navigation window is displayed when zoom ratio is altered; area currently visible in monitor is indicated by yellow border. 
View other areas of image		
Select faces	🔍+	Faces (up to 10) detected during zoom are indicated by white borders in navigation window. Press 🔍 and ◀ or ▶ to view other faces.
View other images		Rotate command dial to view same location in other images at current zoom ratio.
Cancel zoom	OK	Cancel zoom and return to full-frame playback.
Change protect status	(AE-L AF-L)	See page 100 for more information.
Return to shooting mode		Monitor will turn off. Photographs can be taken immediately.
Display menus	MENU	See page 117 for more information.

Protecting Photographs from Deletion

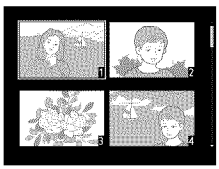
In full-frame, zoom, thumbnail, and calendar playback, the O-n button can be used to protect photographs from accidental deletion. Protected files can not be deleted using the 🗑 button or the **Delete** option in the playback menu. Note that protected images *will* be deleted when the memory card is formatted (📖 21).

To protect a photograph:

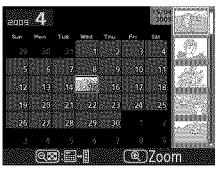
1 Select an image.

Display the image in full-frame playback or playback zoom or highlight it in the thumbnail list in thumbnail or calendar playback.

Full-frame playback



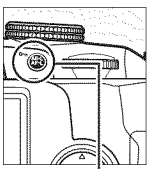
Thumbnail playback



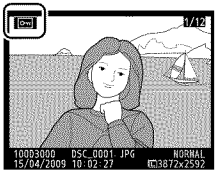
Calendar playback

2 Press the O-n (AE-L/AF-L) button.

The photograph will be marked with a O-n icon. To remove protection from the photograph so that it can be deleted, display the photograph or highlight it in the thumbnail list and then press the O-n (AE-L/AF-L) button.



O-n (AE-L/AF-L) *button*



Deleting Photographs

To delete the photograph displayed in full-frame playback or the photograph highlighted in the thumbnail list, press the 🗑 button. To delete multiple selected photographs, all photographs taken on a selected date, or all photographs in the current playback folder, use the **Delete** option in the playback menu. Once deleted, photographs can not be recovered.

Full-Frame, Thumbnail, and Calendar Playback

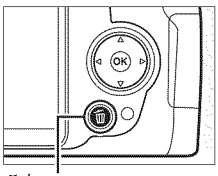
Press the 🗑 button to delete the current photograph.

1 Select an image.

Display the image or highlight it in the thumbnail list in thumbnail or calendar playback.

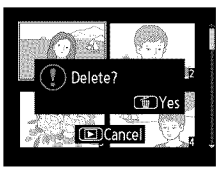
2 Press the 🗑 button.

A confirmation dialog will be displayed.

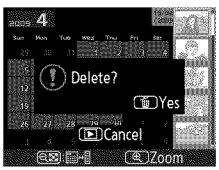


🗑 button

Full-frame playback



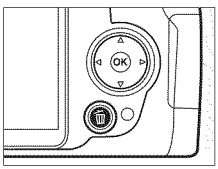
Thumbnail playback



Calendar playback (thumbnail list)

3 Press the 🗑 button again.

To delete the photograph, press the 🗑 button again. To exit without deleting the photograph, press the ▶ button.



Calendar Playback

During calendar playback, you can delete all photographs taken on a selected date by highlighting the date in the date list and pressing the 🗑 button (📖 98).

The Playback Menu

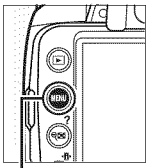
The **Delete** option in the playback menu contains the following options. Note that depending on the number of images, some time may be required for deletion.

Option	Description
Selected	Delete selected pictures.
Select date	Delete all pictures taken on a selected date.
All	Delete all pictures in the folder currently selected for playback (□ 117).

Selected: Deleting Selected Photographs

1 Select **Delete**.

To display the menus, press the MENU button. Highlight **Delete** in the playback menu and press ▶.



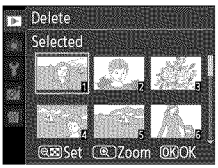
MENU *button*

2 Choose **Selected**.

Highlight **Selected** and press ▶.

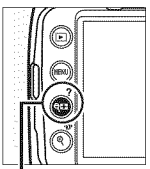
3 Highlight a picture.

Use the multi selector to highlight a picture (to view the highlighted picture full screen, press and hold the 🔍 button).

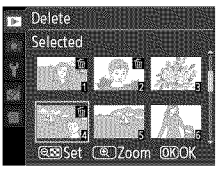


4 Select the highlighted picture.

Press the 🔍 button to select the highlighted picture. Selected pictures are marked by a 🗑 icon. Repeat steps 3 and 4 to select additional pictures; to deselect a picture, highlight it and press 🔍.

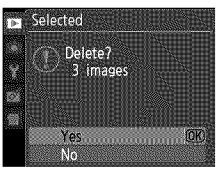


🔍 *button*



5 Press Ⓚ to complete the operation.

A confirmation dialog will be displayed; highlight **Yes** and press Ⓚ.



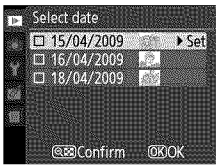
■■ *Select Date: Deleting Photographs Taken on a Selected Date*

1 Choose **Select Date.**

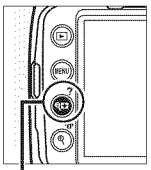
In the delete menu, highlight **Select date** and press ▶.

2 Highlight a date.

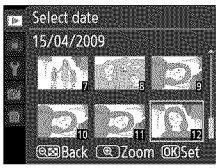
Press ▲ or ▼ to highlight a date.



To view the pictures taken on the highlighted date, press ⊖. Use the multi selector to scroll through the pictures, or press ⊕ to view the current picture full screen. Press ⊖ to return to the date list.

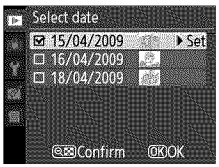


⊖ *button*



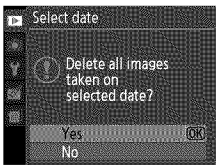
3 Select the highlighted date.

Press ▶ to select all pictures taken on the highlighted date. Selected dates are marked with a ☑ icon. Repeat steps 2 and 3 to select additional dates; to deselect a date, highlight it and press ▶.



4 Press Ⓚ to complete the operation.

A confirmation dialog will be displayed; highlight **Yes** and press Ⓚ.

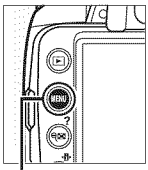


Slide Shows

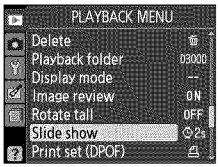
The **Slide show** option in the playback menu is used to display a slide show of the pictures in the current playback folder (🕮 117).

1 Select **Slide show.**

To display the slide show menu, press the MENU button and select **Slide show** in the playback menu.

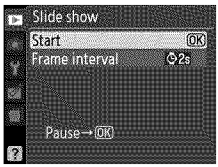


MENU *button*



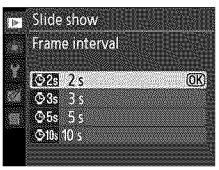
2 Select **Start.**

To start the slide show, highlight **Start** in the slide show menu and press OK.



Choosing a Frame Interval

To choose how long each picture will be displayed, select **Frame interval** and choose from the options shown at right before selecting **Start** to start the slide show.



The following operations can be performed while the slide show is in progress:

To	Use	Description
Skip back/skip ahead		Press ◀ to return to previous frame, ▶ to skip to next frame.
View additional photo info		Change photo info displayed (🕮 92).
Pause/resume slide show	OK	Pause show. Press again to resume.
Exit to playback menu	MENU	See page 117 for more information.
Exit to playback mode	▶	End show and return to playback mode.
Exit to shooting mode		Press shutter-release button halfway to return to shooting mode.

The dialog shown at right is displayed when the show ends. Select **Restart** to restart or **Exit** to return to the playback menu.

Connections

Connecting to a Computer

This section describes how to use the supplied UC-E4 USB cable to connect the camera to a computer.

Before Connecting the Camera

Before connecting the camera, install the software on the supplied Software Suite CD. To ensure that data transfer is not interrupted, be sure the camera EN-EL9a battery is fully charged. If in doubt, charge the battery before use or use an EH-5a AC adapter and EP-5 power connector (available separately).

■ *Supplied Software*

Nikon Transfer is used to copy photographs from the camera to the computer, where they can be viewed using ViewNX (Nikon Transfer can also be used to back up photographs and embed information in photographs as they are transferred, while ViewNX can be used to sort photographs, convert images to different file formats, edit NEF/RAW photographs, and adjust NEF/RAW and JPEG images).

■ *Supported Operating Systems*

The supplied software can be used with computers running the following operating systems:

- **Windows**: Windows Vista Service Pack 1 (32-bit Home Basic/Home Premium/ Business/Enterprise/Ultimate) and Windows XP Service Pack 3 (Home Edition/ Professional).
- **Macintosh**: Mac OS X (version 10.3.9, 10.4.11, 10.5.6)

See the websites listed on page xvi for the latest information on supported operating systems.

Connecting Cables
Be sure the camera is off when connecting or disconnecting interface cables. Do not use force or attempt to insert the connectors at an angle. Close the connector cover when the connector is not in use.

During Transfer
Do not turn the camera off or disconnect the USB cable while transfer is in progress.

Connecting the Camera

Connect the camera using the supplied USB cable.

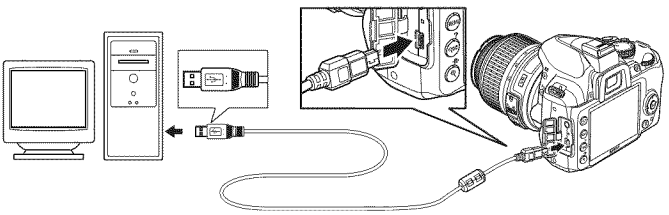
1 Turn the camera off.

2 Turn the computer on.

Turn the computer on and wait for it to start up.

3 Connect the USB cable.

Connect the USB cable as shown. Do not use force or attempt to insert the connectors at an angle.

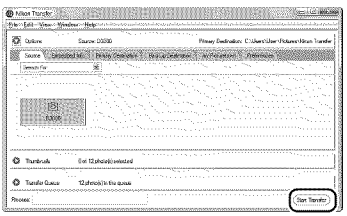


> **USB Hubs**
> Connect the camera directly to the computer; do not connect the cable via a USB hub or keyboard.

4 Turn the camera on.

5 Transfer photographs.

Nikon Transfer will start automatically; click the **Start Transfer** button to transfer photographs (for more information on using Nikon Transfer, select **Nikon Transfer help** from the Nikon Transfer **Help** menu).



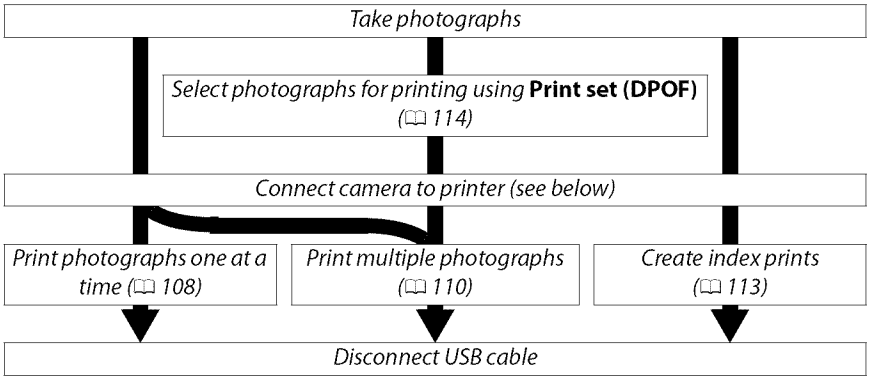
Start Transfer *button*

6 Turn the camera off and disconnect the USB cable when transfer ends.

Nikon Transfer will close automatically when transfer is complete.

Printing Photographs

To print selected JPEG pictures on a PictBridge printer via a direct USB connection, follow the steps below.


Take photographs
Select photographs for printing using Print set (DPOF) (📖 114)
Connect camera to printer (see below)
Print photographs one at a time (📖 108)
Print multiple photographs (📖 110)
Create index prints (📖 113)
Disconnect USB cable

Printing Via Direct USB Connection
Be sure the EN-EL9a battery is fully charged or use an optional EH-5a AC adapter and EP-5 power connector. When taking photographs to be printed via direct USB connection in **P**, **S**, **A**, and **M** modes, set **Color space** to **sRGB** (📖 121).

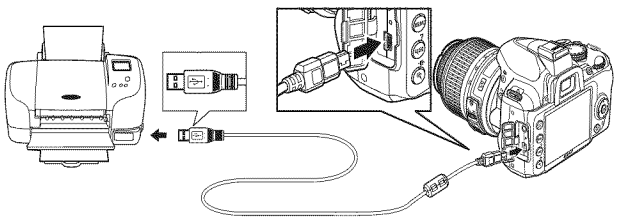
Connecting the Printer

Connect the camera using the supplied USB cable.

1 Turn the camera off.

2 Connect the USB cable.

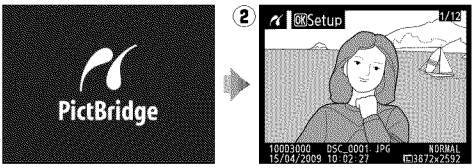
Turn the printer on and connect the USB cable as shown. Do not use force or attempt to insert the connectors at an angle.



USB Hubs
Connect the camera directly to the printer; do not connect the cable via a USB hub.

3 Turn the camera on.

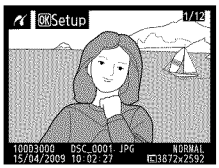
A welcome screen will be displayed in the monitor, followed by a PictBridge playback display.



Printing Pictures One at a Time

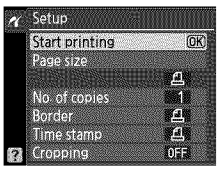
1 Select a picture.

Press ◀ or ▶ to view additional pictures, or press ▲ or ▼ to view photo information (📖 92). Press the 🔍 button to zoom in on the current frame (📖 99; press ▶ to exit zoom). To view six pictures at a time, press the 🔍 button. Use the multi selector to highlight pictures, or press 🔍 to display the highlighted picture full frame.



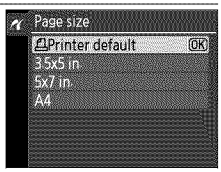
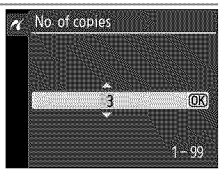
2 Display printing options.

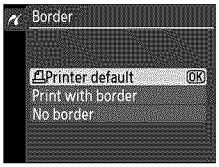
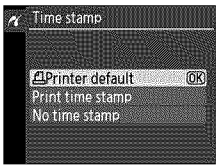
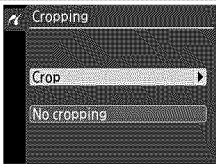
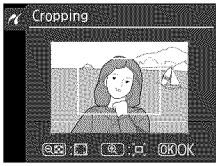
Press OK to display PictBridge printing options.



3 Adjust printing options.

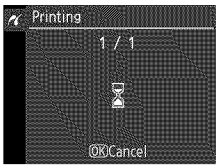
Press ▲ or ▼ to highlight an option and press ▶ to select.

Option	Description	
Page size	Menu of page sizes will be displayed (options not supported by current printer are not listed). Press ▲ or ▼ to choose page size (to print at default page size for current printer, select **Printer default**), then press OK to select and return to previous menu.	
No. of copies	Menu shown at right will be displayed. Press ▲ or ▼ to choose number of copies (maximum 99), then press OK to select and return to previous menu.	

Option	Description
Border	This option is available only if supported by current printer. Menu shown at right will be displayed. Press ▲ or ▼ to choose print style from **Printer default** (print using current printer settings), **Print with border** (print photo with white border), or **No border**, then press OK to select and return to previous menu. Only options supported by current printer will be displayed. 
Time stamp	Menu shown at right will be displayed. Press ▲ or ▼ to choose **Printer default** (print using current printer settings), **Print time stamp** (print time and date of recording on photo), or **No time stamp**, then press OK to select and return to previous menu. Only options supported by current printer will be displayed. 
Cropping	This option is available only with printers that support cropping. Menu shown at right will be displayed. To exit without cropping picture, highlight **No cropping** and press OK. To crop picture, highlight **Crop** and press ▶.  If **Crop** is selected, dialog shown at right will be displayed. Press to increase size of crop, to decrease. Choose position of crop using multi selector and press OK. Note that print quality may drop if small crops are printed at large sizes. 

4 Start printing.

Select **Start printing** and press OK to start printing. To cancel before all copies have been printed, press OK.



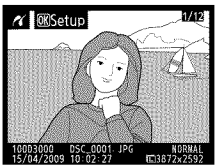
Date Imprint

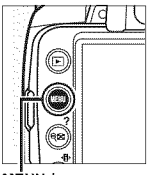
If you select **Print time stamp** in the PictBridge menu when printing photographs containing date information recorded using **Date imprint** in the setup menu (📖 136), the date will appear twice. The imprinted date may however be cropped out if the photographs are cropped or printed without a border.

Printing Multiple Pictures

1 Display the PictBridge menu.

Press the **MENU** button in the PictBridge playback display (see Step 3 on page 108).

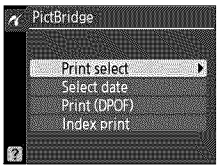




MENU *button*

2 Choose an option.

Highlight one of the following options and press ▶.

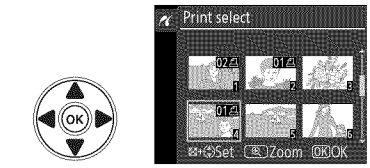


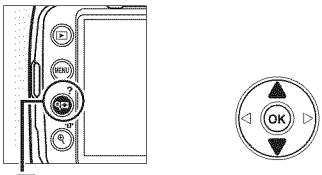
- **Print select**: Select pictures for printing.
- **Select date**: Print one copy of all the pictures taken on a selected date.
- **Print (DPOF)**: Print an existing print order created with the **Print set (DPOF)** option in the playback menu (🕮 114). The current print order will be displayed in Step 3.

To create an index print of all JPEG pictures on the memory card, select **Index print**. See page 113 for more information.

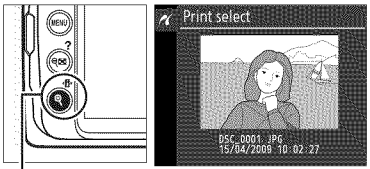
3 Select pictures or choose a date.

If you chose Print select or Print (DPOF) in Step 2, use the multi selector to scroll through the pictures on the memory card. To display the current picture full screen, press and hold the 🔍 button. To select the current picture for printing, press the ⊟ button and press ▲. The picture will be marked with a 🖨 icon and the number of prints will be set to 1. Keeping the ⊟ button pressed, press ▲ or ▼ to specify the number of prints (up to 99; to deselect the picture, press ▼ when the number of prints is 1). Continue until all the desired pictures have been selected.





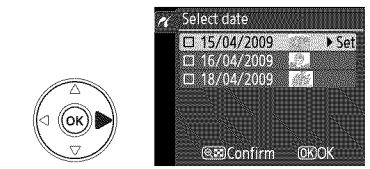
⊟ + ▲▼: *Choose number of copies*



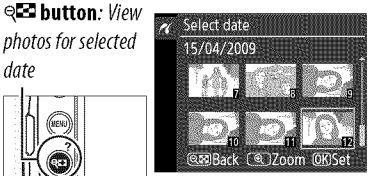
🔍 **button**: *View photo full screen*

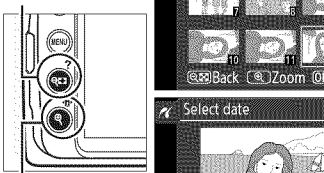
> **Selecting Photographs for Printing**
> NEF (RAW) photographs (📖 50) can not be selected for printing. JPEG copies of NEF (RAW) images can be created using the **NEF (RAW) processing** option in the retouch menu (📖 149).

If you chose Select date in Step 2, press ▲ or ▼ to highlight a date and press ▶ to toggle the highlighted date on or off. To view the pictures taken on the selected date, press ⊟. Use the multi selector to scroll through the pictures, or press and hold 🔍 to view the current picture full screen.

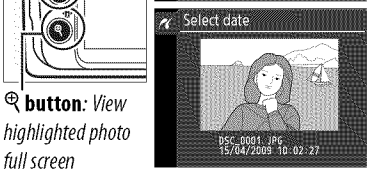


⊟ **button**: *View photos for selected date*



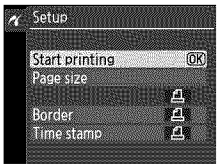


🔍 **button**: *View highlighted photo full screen*



4 Display printing options.

Press ⓞ to display PictBridge printing options.



5 Adjust printing options.

Press ▲ or ▼ to highlight an option and press ▶ to select.

Option	Description
Page size	Menu of page sizes will be displayed (🕮 108; options not supported by current printer are not listed). Press ▲ or ▼ to choose page size (to print at default page size for current printer, select **Printer default**), then press ⓞ to select and return to previous menu.
Border	Menu of border options will be displayed (🕮 109; options not supported by current printer are not listed). Press ▲ or ▼ to choose print style from **Printer default** (print at current printer settings), **Print with border** (print photo with white border), or **No border**, then press ⓞ to select and return to previous menu.
Time stamp	Menu of time stamp options will be displayed (🕮 109; options not supported by current printer are not listed). Press ▲ or ▼ to choose **Printer default** (print at current printer settings), **Print time stamp** (print time and date of recording on photo), or **No time stamp**, then press ⓞ to select and return to previous menu.

6 Start printing.

Select **Start printing** and press ⓞ to start printing. To cancel before all copies have been printed, press ⓞ.

Errors

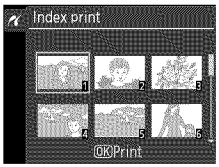
See page 183 for information on what to do if an error occurs during printing.

Creating Index Prints

To create an index print of all JPEG pictures on the memory card, select **Index print** in Step 2 of "Printing Multiple Pictures" (🕮 110). Note that if the memory card contains more than 256 pictures, only the first 256 images will be printed.

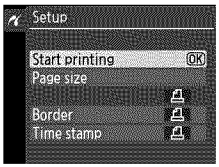
1 Select **Index print.**

Selecting **Index print** in the PictBridge menu (🕮 110) displays the images on the memory card as shown at right.



2 Display printing options.

Press OK to display PictBridge printing options.



3 Adjust printing options.

Choose page size, border, and time stamp options as described on page 112 (a warning will be displayed if the selected page size is too small).

4 Start printing.

Select **Start printing** and press OK to start printing. To cancel before all copies have been printed, press OK.

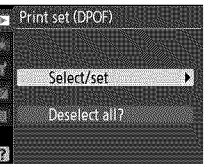
Creating a DPOF Print Order: Print Set

The **Print set (DPOF)** option in the playback menu is used to create digital "print orders" for PictBridge-compatible printers and devices that support DPOF. Selecting **Print set (DPOF)** from the playback menu displays the menu shown in Step 1.

1 Choose Select/set.

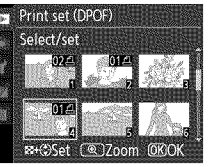
Highlight **Select/set** and press ▶.

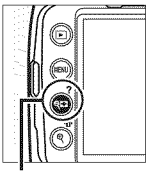
> **Creating a New Print Order**
> To remove all previously selected pictures from the print order, highlight **Deselect all?** and press OK.



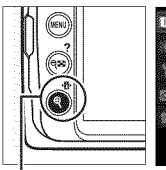
2 Select pictures.

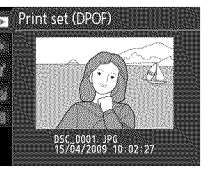
Use the multi selector to scroll through the pictures on the memory card. To display the current picture in full screen, press and hold the 🔍 button. To select the current picture for printing, press the ⊟ button and press ▲. The picture will be marked with a 🖨 icon and the number of prints will be set to 1. Keeping the ⊟ button pressed, press ▲ or ▼ to specify the number of prints (up to 99; to deselect the picture, press ▼ when the number of prints is 1). Continue until all the desired pictures have been selected.





⊟ + ▲▼: *Choose number of copies*

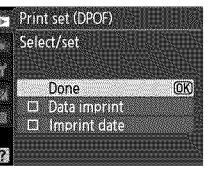




🔍 **button**: *View photo full screen*

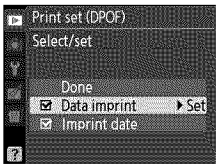
3 Display imprint options.

Press OK to display data imprint options.



4 Select imprint options.

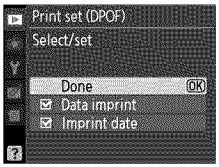
Highlight the following options and press ▶ to toggle the highlighted option on or off (to complete the print order without including this information, proceed to Step 5).



- **Data imprint**: Print shutter speed and aperture on all pictures in print order.
- **Imprint date**: Print date of recording on all pictures in print order.

5 Complete the print order.

Highlight **Done** and press OK to complete the print order.



Print Set (DPOF)

To print the current print order when the camera is connected to a PictBridge printer, select **Print (DPOF)** in the PictBridge menu and follow the steps in "Printing Multiple Pictures" to modify and print the current order (🕮 110). DPOF date and data imprint options are not supported when printing via direct USB connection; to print the date of recording on photographs in the current print order, use the PictBridge **Time stamp** option.

The **Print set (DPOF)** option can not be used if there is not enough space on the memory card to store the print order.

NEF (RAW) photographs (🕮 50) can not be selected using this option. JPEG copies of NEF (RAW) images can be created using the **NEF (RAW) processing** option in the retouch menu (🕮 149).

Print orders may not print correctly if images are deleted using a computer or other device after the print order is created.

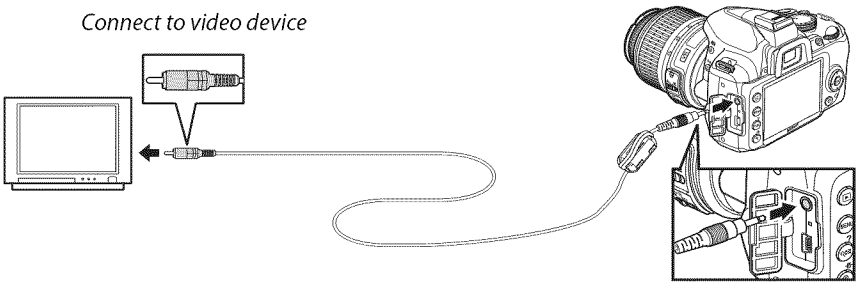
Viewing Photographs on TV

An EG-D100 video cable (available separately) can be used to connect the camera to a television or VCR for playback or recording. Before connecting the camera, confirm that the camera video standard (🕮 127) matches that used in the TV.

1 Turn the camera off.

Always turn the camera off before connecting or disconnecting the video cable.

2 Connect the video cable as shown.



3 Tune the television to the video channel.

4 Turn the camera on and press the ▶ button.

During playback, the camera monitor will turn off and images will be displayed on the television screen. Note that the edges of images may not be displayed.

Video Mode

If no image is displayed, check that camera is correctly connected and that the option selected for **Video mode** (🕮 127) matches the video standard used in the TV.

Television Playback

Use of an EH-5a AC adapter and EP-5 power connector (available separately) is recommended for extended playback. When an AC adapter is connected, television playback will end automatically if no operations are performed for about 30 minutes, regardless of the options selected for **Auto off timers** (🕮 130).

Menu Guide

▶ The Playback Menu: *Managing Images*

To display the playback menu, press **MENU** and select the ▶ (playback menu) tab.

MENU *button*

The playback menu contains the following options:

Option	Default	🕮
Delete	—	102
Playback folder	Current	117
Display mode	—	118
Image review	On	118
Rotate tall	Off	118
Slide show	—	104
Frame interval	2 s	
Print set (DPOF)	—	114
Stop-motion movie	—	153

Playback Folder

MENU *button* → ▶ *playback menu*

Choose a folder for playback:

Option	Description
Current	Only photos in the folder currently selected for **Active folder** in the setup menu are displayed during playback. This option is selected automatically when a photo is taken. If a memory card is inserted and this option selected before photos have been taken, a message stating that the folder contains no images will be displayed during playback. Select **All** to begin playback.
All	Pictures in all folders will be visible during playback.

Display Mode

MENU *button* → ▶ *playback menu*

Choose the information available in the playback photo information display (🕮 92). Press ▲ or ▼ to highlight an option, then press ▶ to select the option for the photo information display. A ☑ appears next to selected items; to deselect, highlight and press ▶. To return to the playback menu, highlight **Done** and press ⓞ.

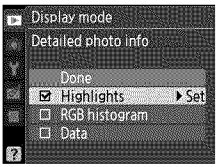
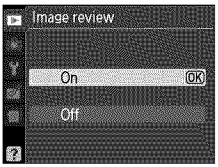


Image Review

MENU *button* → ▶ *playback menu*

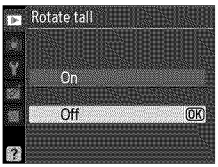
Choose whether pictures are automatically displayed in the monitor immediately after shooting. If **Off** is selected, pictures can only be displayed by pressing the ▶ button.



Rotate Tall

MENU *button* → ▶ *playback menu*

Choose whether to rotate "tall" (portrait-orientation) pictures for display during playback. Note that because the camera itself is already in the appropriate orientation during shooting, images are not rotated automatically during image review (🕮 118).



Option	Description
On	"Tall" (portrait-orientation) pictures are automatically rotated for display in the camera monitor. Pictures taken with **Off** selected for **Auto image rotation** (🕮 128) will be displayed in "wide" (landscape) orientation.
Off	"Tall" (portrait-orientation) pictures are displayed in "wide" (landscape) orientation.

The Shooting Menu: *Shooting Options*

To display the shooting menu, press **MENU** and select the (shooting menu) tab.

MENU *button*

The shooting menu contains the following options:

Option		Default	🕮
Reset shooting options		—	119
Set Picture Control		Standard	87
Image quality		JPEG normal	50
Image size		Large	52
White balance		Auto	80
ISO sensitivity settings			
ISO sensitivity	AUTO, P, S, A, M	Auto	62
	P, S, A, M	100	
Auto ISO sensitivity		Off	
Active D-Lighting		Off	64

Option	Default	🕮
Color space	sRGB	121
Noise reduction	Off	122
Release mode	Single frame	53
Focus mode	Auto-servo AF	41
AF-area mode		
,	Single point	44
	Dynamic area	
AUTO, P, S, A, M	Auto-area	
AF-assist	On	122
Metering	Matrix	74
Built-in flash	TTL	123

Reset Shooting Options

MENU *button* → *shooting menu*

Select **Yes** to reset shooting menu settings.

Reset Shooting Options

Selecting **Yes** for **Reset shooting options** also restores Picture Control settings to their default values (🕮 88) and resets the following:

Option	Default	🕮
Focus point*	Center	46
Flexible program	Off	68
AE-L/AF-L button hold	Off	135

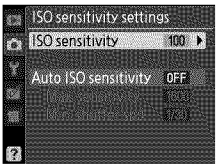
* Focus point not displayed if **Auto-area** is selected for **AF-area mode**.

Option	Default	🕮
Flash mode		
AUTO,	Auto front-curtain sync	59
	Auto slow sync	
P, S, A, M	Front curtain sync	
Exposure compensation	Off	76
Flash compensation	Off	78

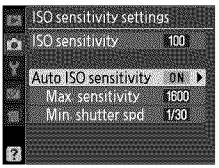
ISO Sensitivity Settings

MENU *button* → *shooting menu*

Adjust ISO sensitivity (□ 62).

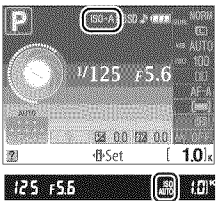


Auto ISO Sensitivity



If **Off** is chosen for **Auto ISO sensitivity** in **P**, **S**, **A**, and **M** modes, ISO sensitivity will remain fixed at the value selected by the user (□ 62). When **On** is chosen, ISO sensitivity will automatically be adjusted if optimal exposure can not be achieved at the value selected by the user (ISO sensitivity is adjusted appropriately when the flash is used). The maximum value for auto ISO sensitivity can be selected using the **Max. sensitivity** option in the **Auto ISO sensitivity** menu (choose lower values to prevent noise; the minimum value for auto ISO sensitivity is automatically set to ISO 100). In modes **P** and **A**, sensitivity will only be adjusted if underexposure would result at the shutter speed selected for **Min. shutter spd**. Slower shutter speeds will be used only if optimum exposure can not be achieved at the ISO sensitivity value selected for **Max. sensitivity**. If the ISO sensitivity selected by the user is higher than the value selected for **Max. sensitivity**, the value selected for **Max. sensitivity** will be used instead.

When **On** is selected, the viewfinder shows **ISO-AUTO** and the information display **ISO-A**. These indictors blink when sensitivity is altered from the value selected by the user.

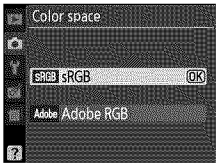


Auto ISO Sensitivity Control

Noise is more likely at higher sensitivities. Use the **Noise reduction** option in the shooting menu to reduce noise (□ 122). Note that ISO sensitivity may be raised automatically when auto ISO sensitivity control is used in combination with slow sync flash modes (available with the built-in flash and SB-900, SB-800, SB-600, and SB-400 flash units), possibly preventing the camera from selecting slow shutter speeds.

Color Space

MENU button → shooting menu



The color space determines the gamut of colors available for color reproduction. Choose **sRGB** for photographs that will be printed or used "as is," with no further modification. **Adobe RGB** has a wider color gamut and is recommended for images that will be extensively processed or retouched after leaving the camera.

Color Space

Color spaces define the correspondence between colors and the numeric values that represent them in a digital image file. The sRGB color space is widely used, while the Adobe RGB color space is typically used in publishing and commercial printing. sRGB is recommended when taking photographs that will be printed without modification or viewed in applications that do not support color management, or when taking photographs that will be printed with ExifPrint, the direct printing option on some household printers, or kiosk printing or other commercial print services. Adobe RGB photographs can also be printed using these options, but colors will not be as vivid.

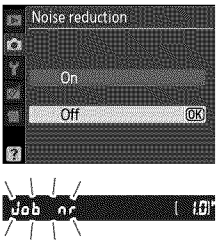
JPEG photographs taken in the Adobe RGB color space are DCF compliant; applications and printers that support DCF will select the correct color space automatically. If the application or device does not support DCF, select the appropriate color space manually. For more information, see the documentation provided with the application or device.

Nikon Software

ViewNX (supplied) and Capture NX 2 (available separately) automatically select the correct color space when opening photographs created with this camera.

Noise Reduction

MENU *button* → *shooting menu*



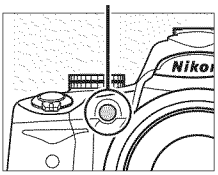
If **On** is selected, photographs taken at shutter speeds slower than 8 s or at ISO sensitivities over ISO 400 will be processed to reduce noise. The time required for processing is roughly equal to the current shutter speed; during processing, "job nr" will blink in the viewfinder and photographs can not be taken. In continuous release mode, frame rates will slow and the capacity of the memory buffer will drop. Noise reduction will not be performed if the camera is turned off before processing is complete.

If **Off** is selected, noise reduction will only be performed at ISO sensitivities over ISO 800; the amount of noise reduction is less than that performed when **On** is selected, and does not apply to noise caused by slow shutter speeds.

AF-Assist

MENU *button* → *shooting menu*

AF-assist illuminator



If **On** is selected and lighting is poor, the built-in AF-assist illuminator (📖 43) will light to assist the focus operation in single-servo AF (**AF-S** selected for focus mode, or single-servo AF selected in **AF-A** focus mode) when [▬] **Auto-area** is selected for AF-area mode or when [▫] **Single point**, [⁘] **Dynamic area**, or [3D] **3D-tracking (11 points)** is selected and the center focus point is used. If **Off** is selected, the AF-assist illuminator will not light to assist the focus operation. The camera may not be able to focus using autofocus when lighting is poor.

See Also

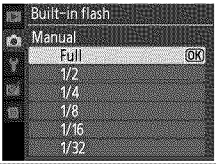
See page 161 for restrictions on the lenses that can be used with AF assist. See page 176 for the shooting modes in which the AF-assist illuminator can be used.

Built-in Flash

MENU button → shooting menu

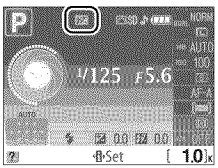
Choose the flash mode for the built-in flash in **P**, **S**, **A**, and **M** modes.

Option	Description
TTL **TTL**	Flash output is adjusted automatically in response to shooting conditions.
Manual	Choose a flash level between **Full** and **1/32** (1/32 of full power). At full power, the built-in flash has a Guide Number of 13/43 (m/ft., ISO 100, 20 °C/68 °F).



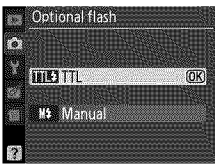
Manual

A icon blinks in the viewfinder and information display when **Manual** is selected and the flash is raised.



The SB-400

When an optional SB-400 flash unit is attached and turned on, **Built-in flash** changes to **Optional flash**, allowing the flash control mode for the SB-400 to be selected from **TTL** and **Manual**.



Flash Control

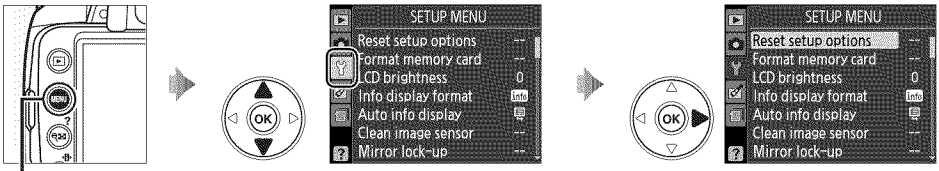
The following types of flash control are supported when a CPU lens is used in combination with the built-in flash or optional SB-900, SB-800, SB-600, and SB-400 flash units (📖 58, 162).

- **i-TTL Balanced Fill-Flash for Digital SLR**: Flash output is adjusted for a natural balance between the main subject and the background.
- **Standard i-TTL Fill-Flash for Digital SLR**: Flash output is adjusted for the main subject; the brightness of the background is not taken into account. Recommended for shots in which the main subject is emphasized at the expense of background details, or when exposure compensation is used.

Standard i-TTL flash control is used with spot metering or when selected with the optional flash unit. i-TTL balanced fill-flash for digital SLR is used in all other cases.

The Setup Menu: *Camera Setup*

To display the setup menu, press **MENU** and select the (setup menu) tab.



MENU *button*

The setup menu contains the following options:

Option	Default	🕮
Reset setup options	—	125
Format memory card	—	21
LCD brightness		
LCD brightness	0	125
Auto dim	On	
Info display format	Graphic; **Background color:** Green	125
Auto info display	On	127
Clean image sensor		
Clean at	Startup & shutdown	170
Mirror lock-up [1]	—	172
Video mode [2]	—	127
Time zone and date [2]		
Daylight saving time	Off	127
Language [2]	—	127
Image comment	—	128
Auto image rotation	On	128

Option	Default	🕮
Dust Off ref photo	—	129
Auto off timers	Normal	130
Self-timer delay	10 s	131
Remote on duration	5 min.	131
Beep	On	131
Viewfinder options		
Viewfinder grid	Off	132
Rangefinder	Off	
File number sequence	Off	133
Buttons		
/Fn button	Self-timer	134
AE-L/AF-L	AE/AF lock	135
AE lock	Off	135
No memory card?	Release locked	136
Date imprint	Off	136
Active folder	—	138
Eye-Fi upload [3]	Enable	139
Firmware version	—	139

1 Not available when battery is low.
2 Default varies with country of purchase.
3 Only available when compatible Eye-Fi memory card is inserted (🕮 139).

Reset Setup Options

MENU *button* → *setup menu*

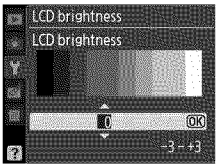
Select **Yes** to reset setup menu all settings except **Video mode**, **Time zone and date**, **Language**, and **Active folder** to the defaults listed on page 124.

LCD Brightness

MENU *button* → *setup menu*

The LCD brightness menu contains the following options:

- **LCD brightness**: The menu at right will be displayed; press ▲ or ▼ to choose monitor brightness. Choose higher values for increased brightness, lower values for reduced brightness.

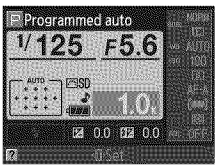


- **Auto dim**: If **On** is selected, the monitor will gradually dim while shooting information is displayed.

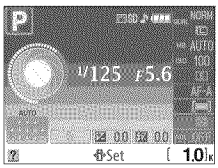
Info Display Format

MENU *button* → *setup menu*

Choose from the following two formats for the information display (🕮 6). Separate formats can be selected for auto and scene modes on the one hand and for **P**, **S**, **A**, and **M** modes on the other.

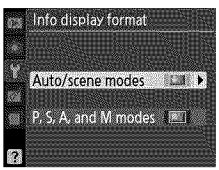


Classic (🕮 126)

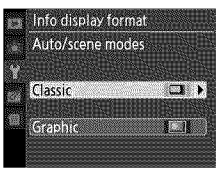


Graphic (🕮 6)

1 **Choose the modes in which the selected information display will be used.**
Highlight **Auto/scene modes** or **P, S, A, and M modes** and press ▶.

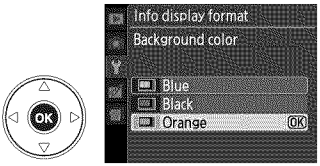


2 **Select Classic or Graphic.**
Highlight **Classic** or **Graphic** and press ▶.



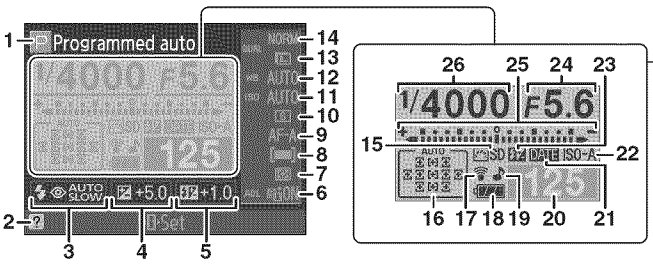
3 Select a background color.

Highlight a background color and press ⓞⓚ. Choose from blue, black, or orange (Classic) or green, black, or brown (Graphic).

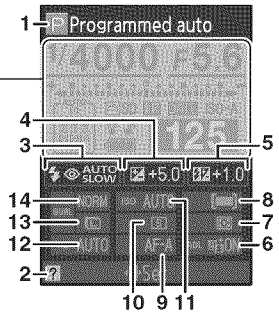


The "Classic" display is shown below.

Camera in normal orientation



Camera rotated 90° to shoot in tall (portrait) orientation



1 Shooting mode
- AUTO auto/
- auto (flash off) 25
- Scene modes 30
- P, S, A, and M modes 67

2 Help icon 183
3 Flash mode 59
4 Exposure compensation 76
5 Flash compensation 78
6 Active D-Lighting 64
7 Metering 74
8 AF-area mode 44
9 Focus mode 41
10 Release mode 53
11 ISO sensitivity 62
12 White balance 80
13 Image size 52
14 Image quality 50
15 Picture Control 87
16 Auto-area AF indicator 45
- 3D-tracking indicator 45
- Focus point 46

17 Eye-Fi connection indicator 139
18 Battery indicator 25
19 "Beep" indicator 131
20 Number of exposures remaining 26
21 Date imprint indicator 136
22 Auto ISO sensitivity indicator 120
23 Manual flash indicator 123
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24 Aperture (f-number) 70, 71
25 Exposure indicator 71
- Exposure compensation indicator 77
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26 Shutter speed 69, 71

Auto Info Display

MENU button → setup menu

This option can be set separately for auto and scene modes and for **P**, **S**, **A**, and **M** modes. If **On** is selected, the information display will appear after the shutter-release button is pressed halfway; if image review (🕮 118) is off, it will also be displayed immediately after shooting. Choose **On** if you find yourself frequently referring to the information display during shooting. If **Off** is selected, the information display can only be viewed by pressing the **info** button.

Video Mode

MENU button → setup menu

When connecting the camera to a television or VCR, be sure the camera video mode matches the device video standard (NTSC or PAL).

Time Zone and Date

MENU button → setup menu

Change time zones, set the camera clock, choose the date display order, and turn daylight saving time on or off.

Option	Description
Time zone	Choose a time zone. The camera clock is automatically set to the time in the new time zone.
Date and time	Set the camera clock (🕮 18).
Date format	Choose the order in which the day, month, and year are displayed.
Daylight saving time	Turn daylight saving time on or off. The camera clock will automatically be advanced or set back one hour. The default setting is **Off**.

Language

MENU button → setup menu

Choose a language for camera menus and messages. The following options are available:

Option	Description
Dk Dansk	Danish
De Deutsch	German
En English	English
Es Español	Spanish
Fi Suomi	Finnish
Fr Français	French

Option	Description
It Italiano	Italian
Nl Nederlands	Dutch
No Norsk	Norwegian
Pl Polski	Polish
Pt Português	Portuguese
Ru Русский	Russian

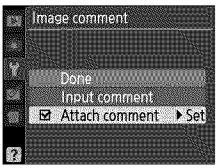
Option	Description
Sv Svenska	Swedish
繁 中文(繁體)	Traditional Chinese
简 中文(简体)	Simplified Chinese
日 日本語	Japanese
한 한글	Korean

Image Comment

MENU *button* → *setup menu*

Add a comment to new photographs as they are taken. Comments can be viewed as metadata in ViewNX (supplied) or Capture NX 2 (available separately; 🕮 167). The comment is also visible on the third shooting data page in the photo information display (🕮 95).

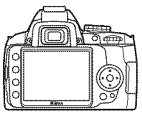
- **Done**: Save changes and return to the setup menu.
- **Input comment**: Input a comment as described on page 138. Comments can be up to 36 characters long.
- **Attach comment**: Select this option to attach the comment to all subsequent photographs. **Attach comment** can be turned on and off by highlighting it and pressing ▶.



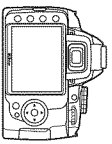
Auto Image Rotation

MENU *button* → *setup menu*

Photographs taken while **On** is selected contain information on camera orientation, allowing them to be rotated automatically during playback or when viewed in ViewNX or Capture NX 2 (available separately; 🕮 167). The following orientations are recorded:



Landscape (wide) orientation



Camera rotated 90° clockwise

Camera rotated 90° counterclockwise

Camera orientation is not recorded when **Off** is selected. Choose this option when panning or taking photographs with the lens pointing up or down.

Auto Image Rotation

In continuous release mode (🕮 53), the orientation recorded for the first shot applies to all photographs in the same burst, even if camera orientation is changed during shooting.

Rotate Tall

To automatically rotate "tall" (portrait-orientation) photographs for display during playback, select **On** for the **Rotate tall** option in the playback menu (🕮 118).

Dust off Ref Photo

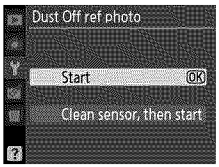
MENU button → setup menu

Acquire reference data for the Image Dust Off option in Capture NX 2 (available separately; for more information, see the Capture NX 2 manual).

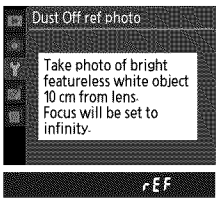
Dust off ref photo is available only when a CPU lens is mounted on the camera. A lens with a focal length of at least 50 mm is recommended. When using a zoom lens, zoom all the way in.

1 Choose a start option.

Highlight one of the following options and press OK. To exit without acquiring image dust off data, press MENU.



- **Start**: The message shown at right will be displayed and "rEF" will appear in the viewfinder.
- **Clean sensor, then start**: Select this option to clean the image sensor before starting. The message shown at right will be displayed and "rEF" will appear in the viewfinder when cleaning is complete.



> **Image Sensor Cleaning**
> Dust off reference data recorded before image sensor cleaning is performed can not be used with photographs taken after image sensor cleaning is performed. Select **Clean sensor, then start** only if the dust off reference data will not be used with existing photographs.

2 Frame a featureless white object in the viewfinder.

With the lens about ten centimeters (four inches) from a well-lit, featureless white object, frame the object so that it fills the viewfinder and then press the shutter-release button halfway.

In autofocus mode, focus will automatically be set to infinity; in manual focus mode, set focus to infinity manually.

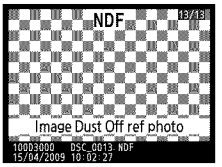
3 Acquire dust off reference data.

Press the shutter-release button the rest of the way down to acquire Image Dust Off reference data. The monitor turns off when the shutter-release button is pressed. Note that noise reduction will be performed if the subject is poorly lit, increasing recording times.

If the reference object is too bright or too dark, the camera may be unable to acquire Image Dust Off reference data and the message shown at right will be displayed. Choose another reference object and repeat the process from step 1.

Image Dust Off Reference Data

The same reference data can be used for photographs taken with different lenses or at different apertures. Reference images can not be viewed using computer imaging software. A grid pattern is displayed when reference images are viewed on the camera.



Auto off Timers

MENU *button* → *setup menu*

This option determines how long the monitor remains on if no operations are performed during menu display and playback (**Playback/menus**), while photographs are displayed in the monitor after shooting (**Image review**), and how long the exposure meters, viewfinder, and information display remain on when no operations are performed (**Auto meter-off**). Choose shorter auto-off delays to reduce the drain on the battery.

Option	Description (all times are approximate)			
SHORT **Short** NORM **Normal** LONG **Long**	Auto-off timers are set to the following values:			
		Playback/menus	Image review	Auto meter-off
	Short	8 s	4 s	4 s
	Normal	12 s	4 s	8 s
	Long	20 s	20 s	1 min.
Custom	Make separate adjustments to the **Playback/menus**, **Image review**, and **Auto meter-off** timers. When settings are complete, highlight **Done** and press OK.			

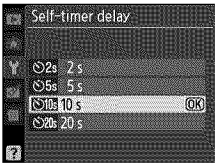
Auto off Timers

The exposure meters will not turn off automatically when the camera is powered by an optional EH-5a AC adapter and EP-5 power connector. The viewfinder will not turn off automatically when the camera is connected to a computer or printer via USB.

Self-Timer Delay

MENU *button* → *setup menu*

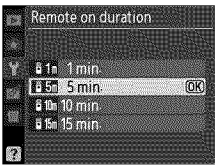
Choose the length of the shutter release delay in self-timer mode (□ 55).



Remote on Duration

MENU *button* → *setup menu*

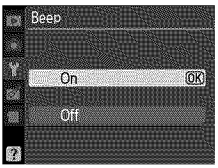
Choose how long the camera will wait for a signal from the remote before cancelling delayed or quick-response remote mode and restoring single-frame or continuous mode (□ 56). Choose shorter times for longer battery life.



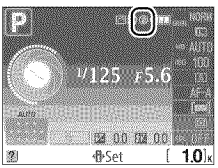
Beep

MENU *button* → *setup menu*

If **On** is selected, a beep will sound when the camera focuses in single-servo AF (**AF-S** or when shooting stationary subjects in **AF-A** focus mode), while the release timer is counting down in self-timer and delayed remote modes (□ 53, 55), or when a photograph is taken in quick-response remote mode (□ 55). The beep will not sound when **Off** is selected.



The current setting is shown in the information display: ♪ is displayed when the beep is on, 🔇 when it is off.



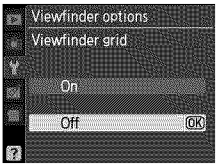
Viewfinder Options

MENU *button* → *setup menu*

Display a framing grid in the viewfinder or choose whether the exposure indicator in the viewfinder can be used as a focusing aid in manual focus mode.

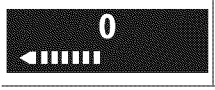
■■ *Viewfinder Grid*

Choose **On** to display on-demand grid lines in the viewfinder for reference when composing photographs.



■■ *Rangefinder*

Choose **On** to use the exposure indicator to determine whether the camera is correctly focused in manual focus mode (📖 42; note that this function is not available in shooting mode **M**, when the exposure indicator instead shows whether the subject is correctly exposed).

Indicator	Description	Indicator	Description
	Camera in focus.		Focus point is slightly behind subject.
	Focus point is slightly in front of subject.		Focus point is well behind subject.
	Focus point is well in front of subject.		Camera can not determine correct focus.

Using the Electronic Rangefinder

The electronic rangefinder requires a lens with a maximum aperture of f/5.6 or faster. The desired results may not be achieved in situations in which the camera would be unable to focus using autofocus (📖 42).

File Number Sequence

MENU *button* → *setup menu*

When a photograph is taken, the camera names the file by adding one to the last file number used. This option controls whether file numbering continues from the last number used when a new folder is created, the memory card is formatted, or a new memory card is inserted in the camera.

Option	Description
On	When a new folder is created, the memory card formatted, or a new memory card inserted in the camera, file numbering continues from the last number used or from the largest file number in the current folder, whichever is higher. If a photograph is taken when the current folder contains a photograph numbered 9999, a new folder will be created automatically and file numbering will begin again from 0001.
Off	File numbering is reset to 0001 when a new folder is created, the memory card is formatted, or a new memory card is inserted in the camera. Note that a new folder is created automatically if a photograph is taken when the current folder contains 999 photographs.
RESET **Reset**	Creates a new folder and resets file numbering to 0001 with the next photograph taken.

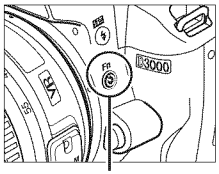
File Number Sequence

If the current folder is numbered 999 and contains either 999 photographs or a photograph numbered 9999, the shutter-release button will be disabled and no further photographs can be taken. Choose **Reset** for **File number sequence** and then either format the current memory card or insert a new memory card.

Choose the roles played by the ⏲/**Fn** and **AE-L/AF-L** buttons.

⏲/*Fn Button*

Choose the role played by the **Fn** (⏲) button.



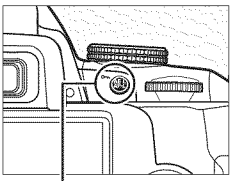
Fn (⏲) *button*

Option	Description
⏲ **Self-timer**	Press the **Fn** (⏲) button to toggle self-timer mode on and off (📖 57).
Release mode*	Press the **Fn** (⏲) button and rotate the command dial to select the release mode (📖 53).
QUAL **Image quality/ size***	Press the **Fn** (⏲) button and rotate the command dial to select image quality and size (📖 50).
ISO **ISO sensitivity***	Press the **Fn** (⏲) button and rotate the command dial to select ISO sensitivity (📖 62).
WB **White balance***	Press the **Fn** (⏲) button and rotate the command dial to select white balance (**P**, **S**, **A**, and **M** modes only; 📖 80).
Active D-Lighting*	Press the **Fn** (⏲) button and rotate the command dial to select an Active D-Lighting option (📖 64).
Set framing grid*	Press the **Fn** (⏲) button and rotate the command dial to display or hide a framing grid in the viewfinder (📖 132).

* The item currently selected for ⏲/**Fn button** is shown by a white-on-black icon (**Release mode** is shown by an **Fn** icon).

■■ *AE-L/AF-L*

Choose the role played by the **AE-L/AF-L** button.

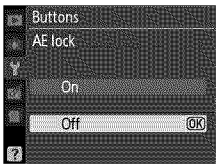


AE-L/AF-L *button*

Option	Description
AE/AF lock	Focus and exposure lock while the **AE-L/AF-L** button is pressed.
AE lock only	Exposure locks while the **AE-L/AF-L** button is pressed.
AF lock only	Focus locks while the **AE-L/AF-L** button is pressed.
AE lock (hold)	Exposure locks when the **AE-L/AF-L** button is pressed, and remains locked until the button is pressed a second time or the exposure meters turn off.
AF-ON	The **AE-L/AF-L** button initiates autofocus. The shutter-release button can not be used to focus.

■■ *AE Lock*

At the default setting of **Off**, exposure only locks when the **AE-L/AF-L** button is pressed. If **On** is selected, exposure will also lock when the shutter-release button is pressed halfway.



No Memory Card?

MENU *button* → *setup menu*

If **Release locked** is selected, the shutter-release button is only enabled when a memory card is inserted in the camera. Selecting **Enable release** allows the shutter to be released when no memory card is inserted, although no pictures will be recorded (they will however be displayed in the monitor in demo mode).

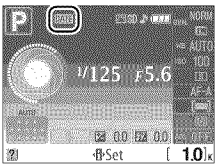
Date Imprint

MENU *button* → *setup menu*

Choose the date information imprinted on photographs as they are taken.

Option	Description
Off	The time and date do not appear on photographs.
DATE **Date**	The date or date and time are imprinted on photographs taken while this option is in effect. 15.04.2009
DATE **Date and time**	15.04.2009 10:02
Date counter	New photos are imprinted with a time stamp showing the number of days between the date of shooting and a selected date (🕮 137).

At settings other than **Off**, the selected option is indicated by a DATE icon in the information display.

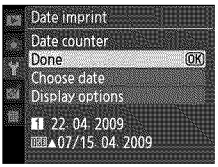


Date Imprint

The date is recorded in the order selected in the **Time zone and date** menu (🕮 127). Date information is not imprinted on photographs taken in NEF (RAW) format and can not be added to or removed from existing pictures. To print the date of recording on photographs taken with date imprint off, select **Time stamp** in the PictBridge menu (🕮 109, 112), or select **Imprint date** in the **Print set (DPOF)** menu to print the date of recording on all pictures in the current DPOF print order (🕮 115).

■■ *Date Counter*

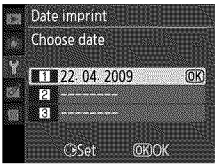
Pictures taken while this option is in effect are imprinted with the number of days remaining until a future date or the number days elapsed since a past date. Use it to track the growth of a child or count down the days until a birthday or wedding.



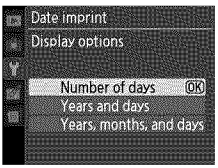
Future date (two days remaining)

Past date (two days elapsed)

Up to three separate dates can be stored in slots 1, 2, and 3. The first time you use the date counter, you will be prompted to select a date for slot 1; enter a date using the multi selector and press ⓚ. To change the date or store additional dates, highlight a slot, press ▶, and enter the date. To use the stored date, highlight the slot and press ⓚ.



To choose a date counter format, highlight **Display options** and press ▶ to display the menu shown at right. Highlight an option and press ⓚ. Highlight **Done** in the date counter menu and press ⓚ when settings are complete.

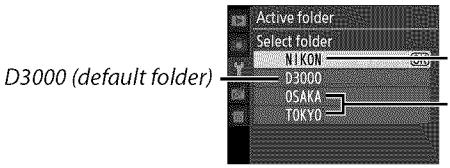


Active Folder

MENU *button* → *setup menu*

Create, rename, or delete folders, or choose the folder in which subsequent photographs will be stored.

- **Select folder**: Choose the folder in which subsequent photographs will be stored.



- **New**: Create a new folder and name it as described below.
- **Rename**: Select a folder from the list and rename it as described below.
- **Delete**: Delete all empty folders on the memory card.

■■ *Naming and Renaming Folders*

Folder names can be up to five characters long. To move the cursor in the name area, rotate the command dial. To enter a new letter at the current cursor position, use the multi selector to highlight the desired character in the keyboard area and press the ⊕ button. To delete the character at the current cursor position, press the 🗑 button. Press OK to save changes and return to the shooting menu, or press MENU to exit without creating a new folder or changing the folder name.

> **Folder Names**
> On the memory card, folder names are preceded by a three-digit folder number assigned automatically by the camera (e.g., 100D3000). Each folder can contain up to 999 photographs. During shooting, pictures are stored in the highest-numbered folder with the selected name. If a photograph is taken when the current folder is full or contains a photograph numbered 9999, the camera will create a new folder by adding one to the current folder number (e.g., 101D3000). The camera treats folders with the same name but different folder numbers as the same folder. For example, if the folder NIKON is selected for **Active folder**, photographs in all folders named NIKON (100NIKON, 101NIKON, 102NIKON, etc.) will be visible when **Current** is selected for **Playback folder** (📖 117). Renaming changes all folders with the same name but leaves the folder numbers intact. Selecting **Delete** deletes empty numbered folders but leaves other folders with the same name intact.

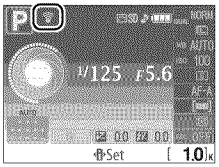
Eye-Fi Upload

MENU button → setup menu

This option is displayed only when an Eye-Fi memory card (available separately from third-party suppliers) is inserted in the camera. Choose **Enable** to upload photographs to a preselected destination. Note that pictures will not be uploaded if signal strength is insufficient.

Observe all local laws concerning wireless devices and choose **Disable** where wireless devices are prohibited.

When an Eye-Fi card is inserted, its status is indicated by an icon in the information display:



- : Eye-Fi upload disabled.
- : Eye-Fi upload enabled but no pictures available for upload.
- (static): Eye-Fi upload enabled; waiting to begin upload.
- (animated): Eye-Fi upload enabled; uploading data.
- : Error.

Eye-Fi Cards

Eye-Fi cards may emit wireless signals when **Disable** is selected. If a warning is displayed in the monitor (📖 183), turn the camera off and remove the card.

See the manual provided with the Eye-Fi card, and direct any inquiries to the manufacturer. The camera can be used to turn Eye-Fi cards on and off, but may not support other Eye-Fi functions.

Supported Eye-Fi Cards

As of April 2009, the following 2 GB Eye-Fi cards can be used: Eye-Fi Card, Eye-Fi Home, Eye-Fi Share, and Eye-Fi Explore. Eye-Fi cards are for use only in the country of purchase. Be sure the Eye-Fi card firmware has been updated to the latest version.

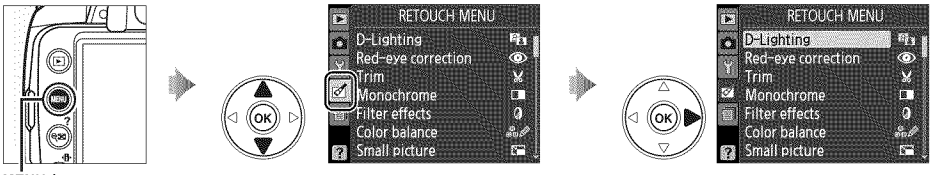
Firmware Version

MENU button → setup menu

View the current camera firmware version.

The Retouch Menu:
Creating Retouched Copies

To display the retouch menu, press **MENU** and select the (retouch menu) tab.



MENU *button*

The retouch menu is used to create trimmed or retouched copies of the photographs on the memory card, and is only available when a memory card containing photographs is inserted in the camera.

Option	🕮	Option	🕮
D-Lighting	142	**Image overlay** [1]	147
Red-eye correction	142	**NEF (RAW) processing**	149
Trim	143	**Quick retouch**	150
Monochrome	143	**Color outline**	150
Filter effects	144	**Miniature effect**	150
Color balance	145	**Stop-motion movie** [1]	151
Small picture	145	**Before and after** [2]	154

1 Can only be selected by pressing **MENU** button and selecting tab.
2 Available only if button is pressed in full-frame playback when a retouched image or original is displayed.

Retouching Copies
Up to ten effects can in most cases be applied in succession to a single image, although with the exception of **Image overlay** each option can only be applied once (note that multiple edits may result in loss of detail). Options that can not be applied to the current image are grayed out and unavailable.

Image Quality
Except in the case of copies created with **Trim**, **Small picture**, **Image overlay**, **NEF (RAW) processing**, and **Stop-motion movie**, copies created from JPEG images are the same size and quality as the original, while copies created from NEF (RAW) photos are saved as large fine-quality JPEG images. Time stamps added with **Date Imprint** (🕮 136) may however be cropped out or illegible depending on the retouch options used.

Creating Retouched Copies

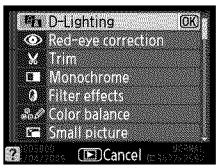
To create a retouched copy:

1 Display a photo full frame (🕮 91).

> **Retouch**
> The camera may not be able to display or retouch images created with other devices.

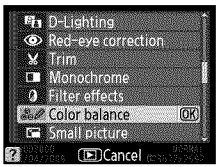
2 Press OK to display the retouch menu.

> **Monitor off Delay**
> The monitor will turn off automatically if no operations are performed for the length of time selected for **Auto off timers**. The default is 12 s.



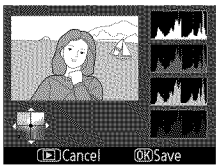
3 Display retouch options.

Highlight the desired item in the retouch menu and press OK.



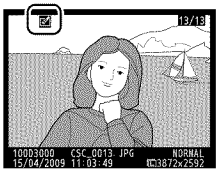
4 Select retouch options.

For more information, see the section for the selected item. To return to full-frame playback without creating a retouched copy, press ▶.

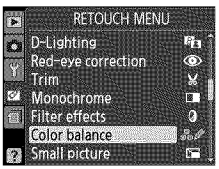


5 Create a retouched copy.

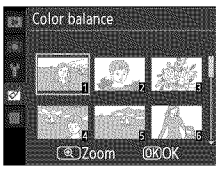
Press OK to create a retouched copy. Retouched copies are indicated by a ✎ icon.



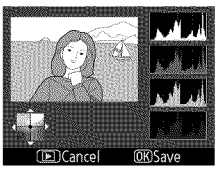
> **Creating Retouched Copies from the Retouch Menu**
> The photographs to be retouched can also be selected from the retouch menu.



Highlight an option and press ▶.



Highlight a picture and press OK.



Create retouched copy of selected picture.

D-Lighting

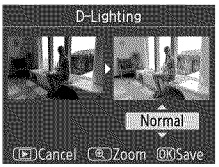
MENU button → retouch menu

D-Lighting brightens shadows, making it ideal for dark or backlit photographs.

Before

After

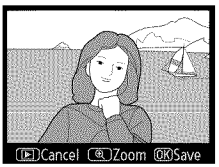
Press ▲ or ▼ to choose the amount of correction performed. The effect can be previewed in the edit display. Press OK to copy the photograph.



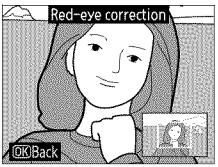
Red-Eye Correction

MENU button → retouch menu

This option is used to correct "red-eye" caused by the flash, and is available only with photographs taken using the flash. The photograph selected for red-eye correction is previewed as shown at right. Confirm the effects of red-eye correction and create a copy as described in the following table. Note that red-eye correction may not always produce the expected results and may in very rare circumstances be applied to portions of the image that are not affected by red-eye; check the preview thoroughly before proceeding.



To	Use	Description
Zoom in		Press button to zoom in, button to zoom out. While photo is zoomed in, use multi selector to view areas of image not visible in monitor. Keep multi selector pressed to scroll rapidly to other areas of frame. Navigation window is displayed when zoom buttons or multi selector is pressed; area currently visible in monitor is indicated by yellow border. Press OK to cancel zoom.
Zoom out		
View other areas of image		
Cancel zoom	OK	
Create copy	OK	If the camera detects red-eye in the selected photograph, a copy will be created that has been processed to reduce its effects. No copy will be created if the camera is unable to detect red-eye.



Trim

MENU button → retouch menu

Create a cropped copy of the selected photograph. The selected photograph is displayed with the selected crop shown in yellow; create a cropped copy as described in the following table.

To	Use	Description
Increase size of crop		Press the button to increase the size of the crop.
Reduce size of crop		Press the button to reduce the size of the crop.
Change crop aspect ratio		Rotate the command dial to switch between aspect ratios of 3 : 2, 4 : 3, 5 : 4, 1 : 1, and 16 : 9.
Move crop		Use multi selector to move the crop to another area of the image.
Create copy	OK	Save the current crop as a separate file.

Trim: Image Quality and Size

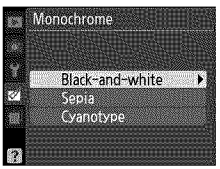
Copies created from NEF (RAW) or **NEF (RAW) + JPEG basic** photos have an image quality of JPEG fine (📖 50); copies created from JPEG photos have the same image quality as the original. The size of the copy varies with crop size and aspect ratio.

Aspect ratio	Possible sizes
3 : 2	3,424 × 2,280, 2,560 × 1,704, 1,920 × 1,280, 1,280 × 856, 960 × 640, 640 × 424
4 : 3	3,424 × 2,568, 2,560 × 1,920, 1,920 × 1,440, 1,280 × 960, 960 × 720, 640 × 480
5 : 4	3,216 × 2,568, 2,400 × 1,920, 1,808 × 1,440, 1,200 × 960, 896 × 720, 608 × 480
1 : 1	2,560 × 2,560, 1,920 × 1,920, 1,440 × 1,440, 960 × 960, 720 × 720, 480 × 480
16 : 9	3,424 × 1,920, 2,560 × 1,440, 1,920 × 1,080, 1,280 × 720, 960 × 536, 640 × 360

Monochrome

MENU button → retouch menu

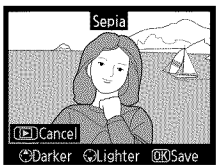
Copy photographs in **Black-and-white**, **Sepia**, or **Cyanotype** (blue and white monochrome).



Selecting **Sepia** or **Cyanotype** displays a preview of the selected image; press ▲ to increase color saturation, ▼ to decrease. Press OK to create a monochrome copy.

Increase saturation

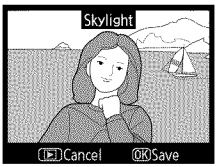
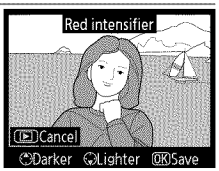
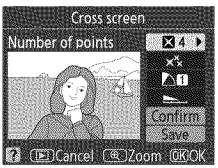
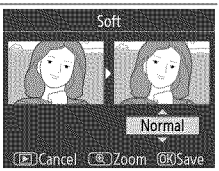
Decrease saturation



Filter Effects

MENU button → retouch menu

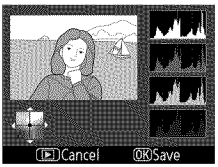
Choose from the following filter effects. After adjusting filter effects as described below, press OK to copy the photograph.

Option	Description
Skylight	Creates the effect of a skylight filter, making the picture less blue. The effect can be previewed in the monitor as shown at right. 
Warm filter	Creates a copy with warm tone filter effects, giving the copy a "warm" red cast. The effect can be previewed in the monitor.
Red intensifier **Green intensifier** **Blue intensifier**	Intensify reds (**Red intensifier**), greens (**Green intensifier**), or blues (**Blue intensifier**). Press ▲ to increase the effect, ▼ to decrease. 
Cross screen	Add starburst effects to light sources. • **Number of points**: Choose from four, six, or eight. • **Filter amount**: Choose the brightness of the light sources affected. • **Filter angle**: Choose the angle of the points. • **Length of points**: Choose the length of points. • **Confirm**: Preview the effects of the filter as shown at right. Press 🔍 to preview the copy full frame. • **Save**: Create a retouched copy. 
Soft	Add a soft filter effect. Use the multi selector to choose from 1 (high), 2 (normal), or 3 (low). 

Color Balance

MENU button → retouch menu

Use the multi selector to create a copy with modified color balance as shown below. The effect is displayed in the monitor together with red, green, and blue histograms (🕮 93) giving the distribution of tones in the copy.



Small Picture

MENU button → retouch menu

Create a small copy of the selected picture. The following sizes are available:

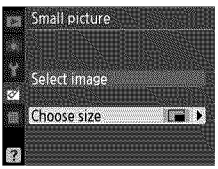
Option	Description
640×480	Suited to television playback.
320×240	Suited to display on Web pages.
160×120	Suitable for e-mail.

The small picture option can be used during full-frame playback as described on page 141. The procedure for selecting pictures after choosing **Small picture** from the retouch menu, however, differs from that described at the beginning of this section: instead of selecting a single photograph and then choosing a picture size, the user selects a picture size first and then selects one or more photographs to copy at the selected size as described below.

Selecting **Small picture** from the retouch menu displays the menu shown in Step 1. Follow the steps below to create small copies of multiple pictures.

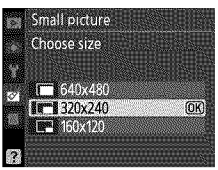
1 Select **Choose size.**

Highlight **Choose size** and press ▶.



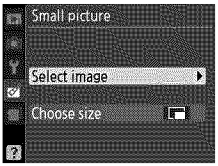
2 Choose the desired size.

Highlight desired size and press OK to select and return to the previous menu.



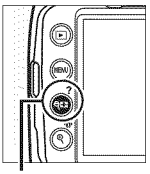
3 Choose **Select image.**

Highlight **Select image** and press ▶.

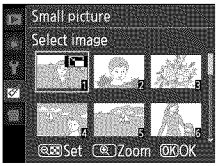


4 Select pictures.

Highlight pictures using the multi selector and press the button to select or deselect. Selected pictures are marked by an icon. To view the highlighted photograph full frame, press and hold the button.

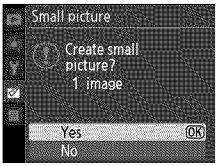


button



5 Press OK to complete the operation.

Press OK. A confirmation dialog will be displayed; highlight **Yes** and press OK to copy pictures at the selected size and return to playback. To exit without creating copies, highlight **No** and press OK, or press MENU to exit to the retouch menu.



Viewing Small Pictures

Small pictures are indicated by a gray border. Playback zoom is not available when small pictures are displayed. Note that because small copies do not have the same aspect ratio as the original, the edges of the copy will be cropped out on its longest dimension.

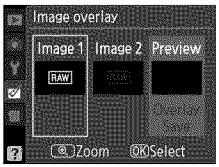
Image Overlay

MENU button → retouch menu

Image overlay combines two existing NEF (RAW) photographs to create a single picture that is saved separately from the originals; the results, which make use of RAW data from the camera image sensor, are noticeably better than overlays created in an imaging application. The new picture is saved at current image quality and size settings; before creating an overlay, set image quality and size (📖 50, 52; all options are available). To create an NEF (RAW) copy, choose an image quality of **NEF (RAW)**.

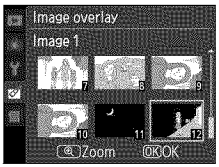
1 Select **Image overlay.**

Highlight **Image overlay** in the retouch menu and press ▶. The dialog shown at right will be displayed, with **Image 1** highlighted.



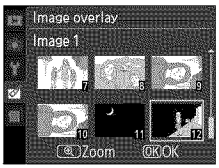
2 Display NEF (RAW) images.

Press OK to display a picture selection dialog listing only NEF (RAW) images created with this camera.



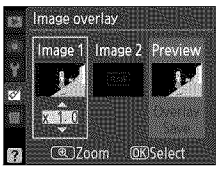
3 Highlight a photograph.

Use the multi selector to highlight the first photograph in the overlay. To view the highlighted photograph full frame, press and hold the 🔍 button.



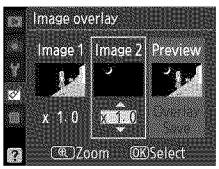
4 Select the highlighted photograph.

Press OK to select the highlighted photograph and return to the preview display. The selected image will appear as **Image 1**.



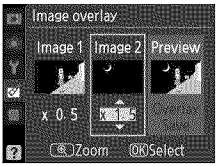
5 Select the second photograph.

Press ▶ to highlight **Image 2**. Repeat Steps 2–4 to select the second photo.



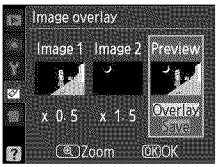
6 Set gain.

Highlight **Image 1** or **Image 2** and optimize exposure for the overlay by pressing ▲ or ▼ to set gain for the selected image to values between 0.1 and 2.0. Repeat for the second image. The default value is 1.0; selecting 0.5 cuts gain in half, while selecting 2.0 doubles gain. The effects of gain are visible in the **Preview** column.



7 Highlight the Preview column.

Press ◀ or ▶ to highlight the **Preview** column.



8 Preview the overlay.

Press ▲ or ▼ to highlight **Overlay** and press OK (to save the overlay without displaying a preview, highlight **Save** and press OK). To return to Step 6 and select new photos or adjust gain, press .

9 Save the overlay.

Press OK while the preview is displayed to save the overlay. After an overlay is created, the resulting image will be displayed full-frame in the monitor.

Image Overlay

The overlay has the same photo info (including date of recording, metering, shutter speed, aperture, shooting mode, exposure compensation, focal length, and image orientation) and values for white balance and Picture Control as the photograph selected for **Image 1**.

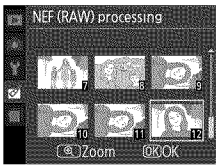
NEF (RAW) Processing

MENU *button* → *retouch menu*

Create JPEG copies of NEF (RAW) photographs.

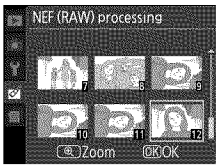
1 Select **NEF (RAW) processing.**

Highlight **NEF (RAW) processing** in the retouch menu and press ▶ to display a picture selection dialog listing only NEF (RAW) images created with this camera.



2 Select a photograph.

Use the multi selector to highlight a photograph (to view the highlighted photograph full frame, press and hold the 🔍 button). Press OK to select the highlighted photograph and proceed to the next step.



3 Adjust NEF (RAW) processing settings.

Choose image quality (📖 50), image size (📖 52), white balance (📖 80), exposure compensation (📖 76), and a Picture Control (📖 87) for the JPEG copy. Color space (📖 121) and noise reduction (📖 122) are set to the values currently selected in shooting mode. Note that white balance is not available with pictures created with image overlay and that exposure compensation increments differ from those used in shooting mode.

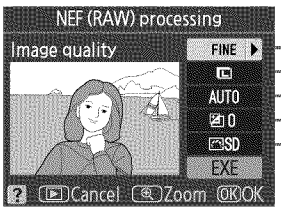


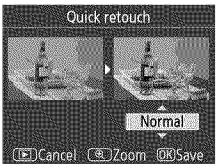
Image quality
Image size
White balance
Exposure compensation
Picture Control

4 Copy the photograph.

Highlight **EXE** and press OK to create a JPEG copy of the selected photograph. The resulting image will be displayed full-frame in the monitor. To exit without copying the photograph, press the MENU button.

Quick Retouch

MENU button → retouch menu

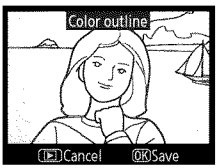


Create copies with enhanced saturation and contrast. D-Lighting is applied as required to brighten dark or backlit subjects.

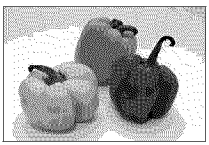
Press ▲ or ▼ to choose the amount of enhancement. The effect can be previewed in the edit display. Press OK to copy the photograph.

Color Outline

MENU button → retouch menu



Create an outline copy of a photographs to use as a base for painting. The effect can be previewed in the edit display. Press OK to copy the photograph.



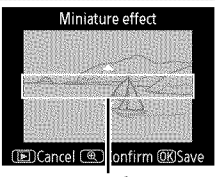
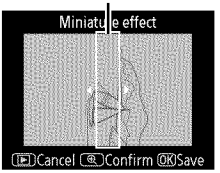
Before

After

Miniature Effect

MENU button → retouch menu

Create a copy that appears to be a photo of a diorama. Works best with photos taken from a high vantage point.

To	Press	Description
Choose area in focus		If photo is displayed in wide orientation, press ▲ or ▼ to position frame showing area of copy that will be in focus.  *Area in focus*
		If photo is displayed in tall orientation (□ 128), press ◀ or ▶ to position frame showing area of copy that will be in focus. 
Preview copy		Preview copy.
Cancel		Exit to full-frame playback without creating copy.
Create copy	OK	Create copy.

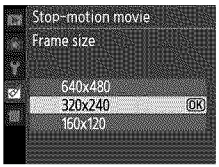
Stop-Motion Movie

MENU button → retouch menu

Selecting **Stop-motion movie** from the retouch menu displays the menu shown in Step 1. Follow the steps below to create a stop-motion movie from photographs taken with the camera.

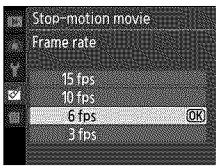
1 Choose the frame size.

Highlight **Frame size** and press ▶ to display a menu of frame size options. Highlight the desired frame size and press OK.



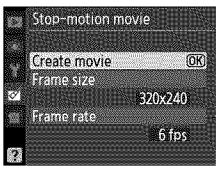
2 Choose the frame rate.

Highlight **Frame rate** and press ▶ to display a menu of frame rate options. Highlight the desired frame rate and press OK.



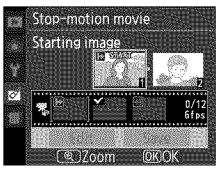
3 Select Create movie.

Highlight **Create movie** and press OK.



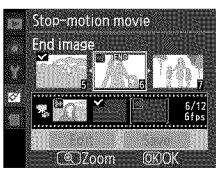
4 Select the first frame.

Press ◀ and ▶ to select a photograph for the first frame (keep the multi selector pressed to scroll rapidly through the photographs) and press OK to select.



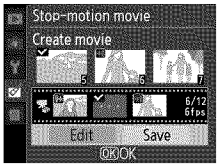
5 Select the last frame.

Use the multi selector to choose the last frame as described Step 4. The pictures in the movie are marked with ✓; if the first frame is after the last frame, the frames in between will appear in the movie in reverse order. The movie can include up to 100 photographs.



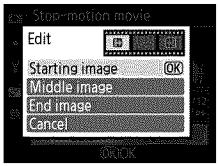
6 Select Save.

The menu shown at right will be displayed; if no further edits are necessary, highlight **Save** and press ⓚ to proceed to Step 7.



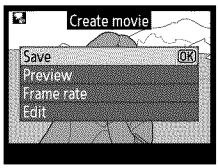
To edit the movie, highlight **Edit** and press ⓚ. The following options will be displayed:

- **Starting image**: Choose a new starting frame.
- **Middle image**: Remove frames from the middle of the movie. Press ◀ and ▶ to highlight a photo, 🔍 to remove the ✔ icon. Pictures from which the ✔ has been removed will be removed from the movie when you press ⓚ.
- **End image**: Choose a new end frame.
- **Cancel**: Exit without making further changes.



7 Save the movie.

The menu shown at right will be displayed; highlight **Save** and press ⓚ to save the movie. To preview the movie, select **Preview**. The movie can be paused, rewound, or fast-forwarded during the preview. To choose a new frame rate, select **Frame rate**; to edit the movie as described in Step 6, select **Edit**.

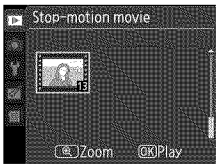


Stop-Motion Movies

Stop-motion movies can not include cropped copies, small copies, or images created with other devices.

■■ *Viewing Stop-Motion Movies*

To view stop-motion movies, select the **Stop-motion movie** option in the playback menu (□ 117). A list of existing stop-motion movies will be displayed; press ◀ and ▶ to highlight a movie and press ⓚ to begin playback. The following operations can be performed while playback is in progress:



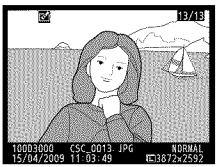
To	Press	Description
Start/pause/ resume	ⓚ	Press ⓚ to start, pause, or resume playback. Playback ends automatically if no operations are performed for about three minutes while movie is paused.
Rewind/ advance		Press ◀ or ▶ to rewind or fast forward. While playback is paused, press ◀ or ▶ to rewind or advance one frame.
Return to full-frame playback	▶/	Press ▶ or ▲ to exit to full-frame playback.

Before and After

Compare retouched copies to the original photographs. This option is only available if the OK button is pressed to display the retouch menu when a copy or original is played back full frame.

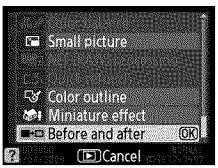
1 Select a picture.

Select a retouched copy (shown by a icon) or a photograph that has been retouched in full-frame playback and press OK.



2 Select Before and after.

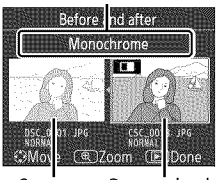
Highlight **Before and after** in the retouch menu and press OK.



3 Compare the copy with the original.

The source image is displayed on the left, the retouched copy on the right, with the options used to create the copy listed at the top of the display. Press ◀ or ▶ to switch between the source image and the retouched copy. To view the highlighted picture full frame, press and hold the ⊕ button. If the copy was created from two images using **Image overlay**, press ▲ or ▼ to view the other source image. If multiple copies exist for the current source image, press ▲ or ▼ to view the other copies. To exit to playback mode, press the ▶ button, or press OK to return to playback with the highlighted image displayed.

Options used to create copy



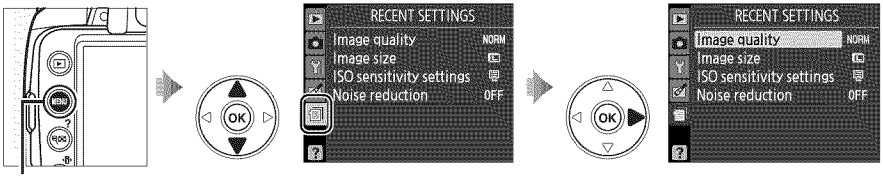
Source image *Retouched copy*

Before-and-After Comparisons

The source image will not be displayed if the copy was created from a photograph that has since been deleted or that was protected when the copy was made (□ 100).

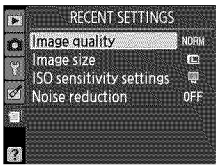
Recent Settings

To display the recent settings menu, press **MENU** and select the (recent settings) tab.



MENU *button*

The recent settings menu lists the twenty most recently used settings. Press ▲ or ▼ to highlight an option and press ▶ to select.



Removing Items from the Recent Settings Menu
To remove an item from the recent settings menu, highlight it and press the 🗑 button. A confirmation dialog will be displayed; press 🗑 again to delete the selected item.

Technical Notes

Compatible Lenses

Compatible CPU Lenses

Autofocus is available with AF-S and AF-I CPU lenses only; autofocus is not supported with other autofocus (AF) lenses. IX NIKKOR lenses can not be used. The features available with compatible CPU lenses are listed below:

Camera setting / Lens/accessory	Focus			Mode		Metering		
	AF	MF (with electronic rangefinder)	MF	Auto and scene modes; P, S, A	M	3D	Color	⊡
AF-S, AF-I NIKKOR [1]	✔	✔	✔	✔	✔	✔	—	✔ [2]
Other type G or D AF NIKKOR [1]	—	✔	✔	✔	✔	✔	—	✔ [2]
PC-E NIKKOR series	—	✔ [3]	✔	✔ [3]	✔ [3]	✔ [3]	—	✔ [2,3]
PC Micro 85mm f/2.8D [4]	—	✔ [3]	✔	—	✔	✔	—	✔ [2,3]
AF-S/AF-I teleconverter [5]	✔ [6]	✔ [6]	✔	✔	✔	✔	—	✔ [2]
Other AF NIKKOR (except lenses for F3AF)	—	✔ [7]	✔	✔	✔	—	✔	✔ [2]
AI-P NIKKOR	—	✔ [8]	✔	✔	✔	—	✔	✔ [2]

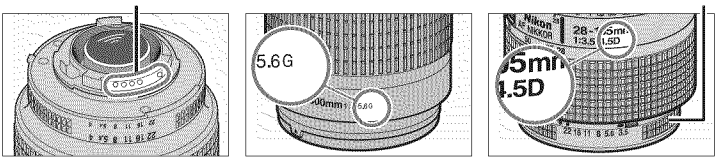
1 Use AF-S or AF-I lenses to get the most from your camera. Vibration Reduction (VR) supported with VR lenses.
2 Spot metering meters selected focus point (🕮 74).
3 Can not be used with shifting or tilting.
4 The camera's exposure metering and flash control systems may not function as expected when the lens is shifted and/or tilted or an aperture other than the maximum aperture is used.
5 AF-S or AF-I lens required.
6 With maximum effective aperture of f/5.6 or faster.
7 When AF 80–200mm f/2.8, AF 35–70mm f/2.8, AF 28–85mm f/3.5–4.5 (New), or AF 28–85mm f/3.5–4.5 lenses are zoomed all the way in at the minimum focus distance, the in-focus indicator may be displayed when the image on the matte screen in the viewfinder is not in focus. Focus manually until image in viewfinder is in focus.
8 With maximum aperture of f/5.6 or faster.

Identifying AF-S and AF-I Lenses
AF-S lenses have names beginning with **AF-S**, AF-I lenses names beginning with **AF-I**.

Identifying CPU and Type G and D Lenses

CPU lenses can be identified by the presence of CPU contacts, type G and D lenses by a letter on the lens barrel. Type G lenses are not equipped with a lens aperture ring.

CPU contacts *Aperture ring*



CPU lens *Type G lens* *Type D lens*

Lens f-number

The f-number given in lens names is the maximum aperture of the lens.

Compatible Non-CPU Lenses

Non-CPU lenses may only be used when the camera is in mode **M**. Selecting another mode disables the shutter release. Aperture must be adjusted manually via the lens aperture ring and the camera metering system, i-TTL flash control, and other features requiring a CPU lens can not be used. Some non-CPU lenses can not be used; see "Incompatible Accessories and Non-CPU Lenses," below.

Camera setting / Lens/accessory	Focus			Mode		Metering
	AF	MF (with electronic rangefinder)	MF	Auto and scene modes; P, S, A	M	[▣], [◉], [▪]
AI-, AI-modified NIKKOR or Nikon Series E lenses	—	✔[1]	✔	—	✔[2]	—
Medical NIKKOR 120mm f/4	—	✔	✔	—	✔[2,3]	—
Reflex NIKKOR	—	—	✔	—	✔[2]	—
PC NIKKOR	—	✔[4]	✔	—	✔[2]	—
AI-type Teleconverter	—	✔[5]	✔	—	✔[2]	—
PB-6 Bellows Focusing Attachment[6]	—	✔[1]	✔	—	✔[2]	—
Auto extension rings (PK-series 11A, 12, or 13; PN-11)	—	✔[1]	✔	—	✔[2]	—

1 With maximum aperture of f/5.6 or faster.
2 Exposure indicator can not be used.
3 Can be used at shutter speeds slower than flash sync speed by one step or more.
4 Can not be used with shifting or tilting.
5 With maximum effective aperture of f/5.6 or faster.
6 Attach in vertical orientation (can be used in horizontal orientation once attached).

☑ Incompatible Accessories and Non-CPU Lenses

The following accessories and non-CPU lenses can NOT be used with the D3000:

- TC-16AS AF teleconverter
- Non-AI lenses
- Lenses that require the AU-1 focusing unit (400mm f/4.5, 600mm f/5.6, 800mm f/8, 1200mm f/11)
- Fisheye (6mm f/5.6, 7.5mm f/5.6, 8mm f/8, OP 10mm f/5.6)
- 2.1cm f/4
- Extension Ring K2
- 180–600mm f/8 ED (serial numbers 174041–174180)
- 360–1200mm f/11 ED (serial numbers 174031–174127)
- 200–600mm f/9.5 (serial numbers 280001–300490)
- AF lenses for the F3AF (AF 80mm f/2.8, AF 200mm f/3.5 ED, AF Teleconverter TC-16)
- PC 28mm f/4 (serial number 180900 or earlier)
- PC 35mm f/2.8 (serial numbers 851001–906200)
- PC 35mm f/3.5 (old type)
- Reflex 1000mm f/6.3 (old type)
- Reflex 1000mm f/11 (serial numbers 142361–143000)
- Reflex 2000mm f/11 (serial numbers 200111–200310)

The Built-in Flash

The built-in flash can be used with lenses with focal lengths of 18–300 mm, although in some cases the flash may be unable to entirely light the subject at some ranges or focal lengths due to shadows cast by the lens, while lenses that block the subject's view of the red-eye reduction lamp may interfere with red-eye reduction. Remove lens hoods to prevent shadows. The flash has a minimum range of 60 cm and can not be used in the macro range of macro zoom lenses. The flash may be unable to light the entire subject with the following lenses at ranges less than those given below:

Lens	Zoom position	Minimum range
AF-S DX NIKKOR 10–24mm f/3.5–4.5G ED	24 mm	2.5 m/8 ft. 2in.
AF-S DX 12–24mm f/4G ED	20 mm	3.0 m/9 ft. 10 in.
	24 mm	1.0 m/3 ft. 3 in.
AF-S DX NIKKOR 16–85mm f/3.5–5.6G ED VR	Under 24 mm	—
AF-S 17–35mm f/2.8D ED	24 mm	2.0 m/6 ft. 7 in.
	28 mm	1.0 m/3 ft. 3 in.
AF-S DX 17–55mm f/2.8G ED	28 mm	1.5 m/4 ft. 11 in.
	35 mm	1.0 m/3 ft. 3 in.
AF 18–35mm f/3.5– 4.5D ED	24 mm	1.0 m/3 ft. 3 in.
AF-S DX 18–70mm f/3.5–4.5G ED	18 mm	1.0 m/3 ft. 3 in.
AF-S DX NIKKOR 18–105mm f/3.5–5.6G ED VR	18 mm	2.5 m/8 ft. 2in.
	24 mm	1.0 m/3 ft. 3 in.
AF-S DX 18–135mm f/3.5–5.6G ED	18 mm	1.0 m/3 ft. 3 in.
AF-S DX VR 18– 200mm f/3.5–5.6G ED	24 mm	1.0 m/3 ft. 3 in.
AF-S DX NIKKOR 18– 200mm f/3.5– 5.6G ED VR II	24 mm	1.0 m/3 ft. 3 in.
AF 20–35mm f/2.8D	24 mm	2.5 m/8 ft. 2in.
	28 mm	1.0 m/3 ft. 3 in.
AF-S NIKKOR 24–70mm f/2.8G ED	35 mm	1.5 m/4 ft. 11 in.
	50 mm	1.0 m/3 ft. 3 in.
AF-S VR 24–120mm f/3.5–5.6G ED	24 mm	1.0 m/3 ft. 3 in.
AF-S 28–70mm f/2.8D ED	35 mm	1.5 m/4 ft. 11 in.
AF-S VR 200–400mm f/4G ED	250 mm	2.5 m/8 ft. 2in.
	350 mm	2.0 m/6 ft. 7 in.
PC-E NIKKOR 24mm f/3.5 ED *	24 mm	3.0 m/9 ft. 10 in.

* When not shifted or tilted.

When used with the AF-S NIKKOR 14–24mm f/2.8G ED, the flash will be unable to light the entire subject at all ranges.

Dark Edges in the Viewfinder

You may notice darkening of the edges of the image in the viewfinder with some lenses. This has no effect on photographs.

AF-Assist Illumination

AF-assist illumination is not available with the following lenses:

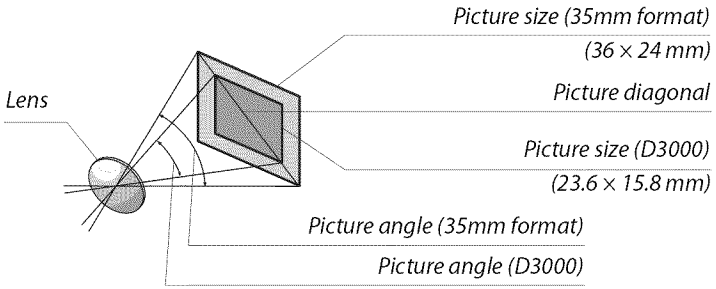
- AF-S NIKKOR 14–24 mm f/2.8G ED
- AF-S VR 70–200 mm f/2.8G ED
- AF-S NIKKOR 70–200mm f/2.8G ED VR II
- AF-S 80–200 mm f/2.8D ED
- AF-S VR 200 mm f/2G ED
- AF-S VR 200–400 mm f/4G ED

At ranges under 1 m (3 ft. 3 in.), the following lenses may block the AF-assist illuminator and interfere with autofocus when lighting is poor:

- AF-S 17–35 mm f/2.8D ED
- AF-S DX 17–55 mm f/2.8G ED
- AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR
- AF-S DX VR 18–200 mm f/3.5–5.6G ED
- AF-S DX NIKKOR 18–200mm f/3.5–5.6G ED VR II
- AF-S NIKKOR 24–70 mm f/2.8G ED
- AF-S VR 24–120 mm f/3.5–5.6G ED
- AF-S 28–70 mm f/2.8D ED
- AF-S VR Micro 105 mm f/2.8G ED

Calculating Picture Angle

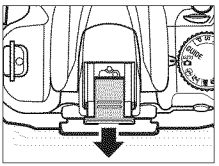
The size of the area exposed by a 35 mm camera is 36 × 24 mm. The size of the area exposed by the D3000, in contrast, is 23.6 × 15.8 mm, meaning that the picture angle of a 35mm camera is approximately 1.5 times that of the D3000. The approximate focal length of lenses for the D3000 in 35 mm format can be calculated by multiplying the focal length of the lens by about 1.5.



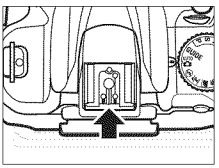
Optional Flash Units (Speedlights)

The camera supports the Nikon Creative Lighting System (CLS) and can be used with CLS-compatible flash units. Optional flash units can be attached directly to the camera accessory shoe as described below. The accessory shoe is equipped with a safety lock for flash units with a locking pin, such as the SB-900, SB-800, SB-600, and SB-400.

1 **Remove the accessory shoe cover.**



2 **Mount the flash unit on the accessory shoe.**
See the manual provided with the flash unit for details. The built-in flash will not fire when an optional flash unit is attached.



The AS-15 Sync Terminal Adapter
When the AS-15 sync terminal adapter (available separately) is mounted on the camera accessory shoe, flash accessories can be connected via a sync cable.

Use Only Nikon Flash Accessories
Use only Nikon flash units. Negative voltages or voltages over 250 V applied to the accessory shoe could not only prevent normal operation, but damage the sync circuitry of the camera or flash. Before using a Nikon flash unit not listed in this section, contact a Nikon-authorized service representative for more information.

The Nikon Creative Lighting System (CLS)

Nikon's advanced Creative Lighting System (CLS) offers improved communication between the camera and compatible flash units for improved flash photography.

■■ *CLS-Compatible Flash Units*

The camera can be used with the following CLS-compatible flash units:

- **The SB-900, SB-800, SB-600, SB-400, and SB-R200:**

Feature \ Flash unit		SB-900 [1]	SB-800	SB-600	SB-400	SB-R200 [2]
Guide No. [3]	ISO 100	34/111	38/125	30/98	21/69	10/33
	ISO 200	48/157	53/174	42/138	30/98	14/46

1 If a color filter is attached to the SB-900 when **AUTO** or ⚡ (flash) is selected for white balance, the camera will automatically detect the filter and adjust white balance appropriately.
2 Controlled remotely using optional SB-900, SB-800 flash unit or SU-800 wireless Speedlight commander.
3 m/ft., 20 °C (68 °F), SB-900, SB-800 and SB-600 at 35 mm zoom head position; SB-900 with standard illumination.

- **The SU-800 wireless speedlight commander:** When mounted on a CLS-compatible camera, the SU-800 can be used as a commander for remote SB-900, SB-800, SB-600, or SB-R200 flash units. The SU-800 itself is not equipped with a flash.

The following features are available with the above flash units:

Flash mode/feature \ Flash unit		SB-900 / SB-800	SB-600	SB-400	Advanced Wireless Lighting: Commander SB-900 / SB-800	Commander SU-800 [1]	Remote SB-900 / SB-800	Remote SB-600	Remote SB-R200
i-TTL	i-TTL balanced fill-flash for digital SLR [2]	✔ [3]	✔ [3]	✔ [4]	✔	✔	✔	✔	✔
AA	Auto aperture [2]	✔ [5]	—	—	✔ [6]	✔ [6]	✔ [6]	—	—
A	Non-TTL auto	✔ [5]	—	—	✔ [6]	—	✔ [6]	—	—
GN	Distance-priority manual	✔	—	—	—	—	—	—	—
M	Manual	✔	✔	✔ [7]	✔	✔	✔	✔	✔
RPT	Repeating flash	✔	—	—	✔	✔	✔	✔	—
AF-assist for multi-area AF [2]		✔	✔	—	✔	✔	—	—	—
Flash Color Information Communication		✔	✔	✔	✔	—	—	—	—
REAR	Rear-curtain sync	✔	✔	✔	✔	✔	✔	✔	✔
👁	Red-eye reduction	✔	✔	✔	✔	—	—	—	—
Power zoom		✔	✔	—	✔	—	—	—	—
Auto ISO sensitivity control (📖 120)		✔	✔	✔	—	—	—	—	—

1 Only available when SU-800 is used to control other flash units.
2 CPU lens required.
3 Standard i-TTL flash for digital SLR is used with spot metering or when selected with flash unit.
4 Standard i-TTL flash for digital SLR is used with spot metering.
5 Selected with flash unit.
6 Auto aperture (**AA**) is used regardless of mode selected with flash unit.
7 Can be selected with camera.

Guide Number

To calculate the range of the flash at full power, divide the Guide Number by the aperture. For example, at ISO 100 the SB-800 has a Guide Number of 38 m or 125 ft. (35 mm zoom head position); its range at an aperture of f/5.6 is 38÷5.6 or about 6.8 meters (or in feet, 125÷5.6=approximately 23 ft. 7 in.). For each twofold increase in ISO sensitivity, multiply the Guide Number by the square root of two (approximately 1.4).

■■ *Other Flash Units*

The following flash units can be used in non-TTL auto and manual modes.

Flash mode \ Flash unit		SB-80DX, SB-28DX, SB-28, SB-26, SB-25, SB-24	SB-50DX[1]	SB-30, SB-27[2], SB-22S, SB-22, SB-20, SB-16B, SB-15	SB-23, SB-29[3], SB-21B[3], SB-29S[3]
A	Non-TTL auto	✔	—	✔	—
M	Manual	✔	✔	✔	✔
REPEAT	Repeating flash	✔	—	—	—
REAR	Rear-curtain sync[4]	✔	✔	✔	✔

1 Select mode **P**, **S**, **A**, or **M**, lower built-in flash, and use optional flash unit only.
2 Flash mode is automatically set to TTL and shutter-release is disabled. Set flash unit to **A** (non-TTL auto flash).
3 Autofocus is available with AF-S VR Micro-Nikkor 105mm f/2.8G IF-ED and AF-S Micro NIKKOR 60mm f/2.8G ED lenses only.
4 Available when camera is used to select flash mode.

✔ Notes on Optional Flash Units

Refer to the Speedlight manual for detailed instructions. If the flash unit supports CLS, refer to the section on CLS-compatible digital SLR cameras. The D3000 is not included in the "digital SLR" category in the SB-80DX, SB-28DX, and SB-50DX manuals.

If an optional flash unit is attached in shooting modes other than ⚡, the flash will fire with every shot, even in modes in which the built-in flash can not be used (🏔 and 🏃).

i-TTL flash control can be used at ISO sensitivities between 100 and 1600. At values over 1600, the desired results may not be achieved at some ranges or aperture settings. If the flash-ready indicator blinks for about three seconds after a photograph is taken, the flash has fired at full power and the photograph may be underexposed.

When an SC-series 17, 28, or 29 sync cable is used for off-camera flash photography, correct exposure may not be achieved in i-TTL mode. We recommend that you choose spot metering to select standard i-TTL flash control. Take a test shot and view the results in the monitor.

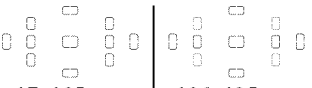
In i-TTL, use the flash panel or bounce adapter provided with the flash unit. Do not use other panels such as diffusion panels, as this may produce incorrect exposure.

If the controls on the optional SB-900, SB-800, SB-600, or SU-800 flash unit are used to set flash compensation, ±☑ will appear in the information display.

Notes on Optional Flash Units (Continued)

The SB-900, SB-800, SB-600, and SB-400 provide red-eye reduction, while the SB-900, SB-800, SB-600, and SU-800 provide AF-assist illumination with the following restrictions:

- **SB-900**: AF-assist illumination is available for all focus points; with 17–135 mm AF lenses, however, autofocus is not available with the focus points shown in gray.



17–105 mm *106–135 mm*

- **SB-800, SB-600 and SU-800**: With 24–105 mm AF lenses, AF-assist illumination is not available with the focus points shown in gray.

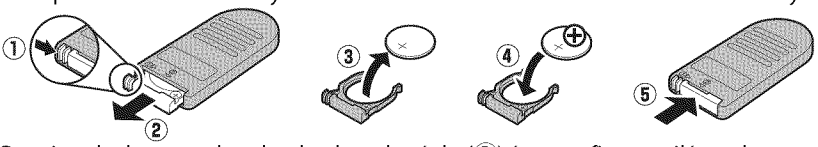
24–34 mm *35–105 mm*

With other flash units, the camera AF-assist illuminator is used for AF-assist illumination and red-eye reduction.

Other Accessories

At the time of writing, the following accessories were available for the D3000.

Power sources	• **Rechargeable Li-ion Battery EN-EL9a** (📖 14–15): Additional EN-EL9a batteries are available from local retailers and Nikon service representatives. The EN-EL9a can be recharged using an MH-23 quick charger. EN-EL9 batteries can also be used. • **Quick Charger MH-23** (📖 14): The MH-23 can be used to recharge EN-EL9a and EN-EL9 batteries. • **Power Connector EP-5, AC Adapter EH-5a**: These accessories can be used to power the camera for extended periods (EH-5 AC adapters can also be used). The EP-5 is required to connect the camera to the EH-5a or EH-5; see page 168 for details.
Video cable	**Video Cable EG-D100**: Use the EG-D100 to connect the camera to a TV.
Filters	• Nikon filters can be divided into three types: screw-on, slip-in, and rear-interchange. Use Nikon filters; filters manufactured by other makers may interfere with autofocus or the electronic rangefinder. • The D3000 can not be used with linear polarizing filters. Use the C-PL circular polarizing filter instead. • The NC and L37C filters are recommended for protecting the lens. • To prevent ghosting, use of a filter is not recommended when the subject is framed against a bright light, or when a bright light source is in the frame. • Center-weighted metering is recommended with filters with exposure factors (filter factors) over 1 × (Y44, Y48, Y52, O56, R60, X0, X1, C-PL, ND2S, ND4, ND4S, ND8, ND8S, ND400, A2, A12, B2, B8, B12). See the filter manual for details.
Viewfinder eyepiece accessories	• **DK-20C Eyepiece Correction Lenses**: Lenses are available with diopters of –5, –4, –3, –2, 0, +0.5, +1, +2, and +3 m^{-1} when the camera diopter adjustment control is in the neutral position (–1 m^{-1}). Use eyepiece correction lenses only if the desired focus can not be achieved with the built in diopter adjustment control (–1.7 to +0.5 m^{-1}). Test eyepiece correction lenses before purchase to ensure that the desired focus can be achieved. The rubber eyecup can not be used with eyepiece correction lenses. • **Magnifier DG-2**: The DG-2 magnifies the scene displayed in the center of the viewfinder. Use for close-up photography, copying, telephoto lenses, and other tasks that require added precision. Eyepiece adapter required (available separately). • **Eyepiece Adapter DK-22**: The DK-22 is used when attaching the DG-2 magnifier. • **Right-Angle Viewing Attachment DR-6**: The DR-6 attaches at a right angle to the viewfinder eyepiece, allowing the image in the viewfinder to be viewed at right angles to the lens (for example, from directly above when the camera is horizontal).
Optional flash units (📖 162)	• **Nikon Speedlights SB-900, SB-800, SB-600, and SB-400** • **Nikon Wireless Remote Speedlight SB-R200** • **Wireless Speedlight Commander SU-800**

Software	**Capture NX 2**: A complete photo editing package. **Note**: Use the latest versions of Nikon software. Most Nikon software offers an auto update feature when the computer is connected to the Internet. See the websites listed on page xvi for the latest information on supported operating systems.
Body cap	**Body Cap BF-1A**: The body cap keeps the mirror, viewfinder screen, and low-pass filter free of dust when a lens is not in place.
Remote controls	**Wireless Remote Control ML-L3** (🕮 55): Use as a remote shutter release for self-portraits or to prevent blur caused by camera shake. The ML-L3 uses a 3 V CR2025 battery.  Pressing the battery-chamber latch to the right (①), insert a fingernail into the gap and open the battery chamber (②). Ensure that the battery is inserted in the correct orientation (④).

Approved Memory Cards

The following SD memory cards have been tested and approved for use in the D3000. All cards of the designated make and capacity can be used, regardless of speed.

SanDisk	512 MB, 1 GB, 2 GB *, 4 GB †, 8 GB †, 16 GB †
Toshiba	512 MB, 1 GB, 2 GB *, 4 GB †, 8 GB †, 16 GB †, 32 GB †
Panasonic	512 MB, 1 GB, 2 GB *, 4 GB †, 6 GB †, 8 GB †, 12 GB †, 16 GB †, 32 GB †
Lexar Media	512 MB, 1 GB, 2 GB *, 4 GB †, 8 GB † **Platinum II**: 512 MB, 1 GB, 2 GB *, 4 GB †, 8 GB † **Professional**: 1 GB, 2 GB *, 4 GB †, 8 GB †

* If card will be used with card reader or other device, check that the device supports 2GB cards.

† SDHC compliant. If card will be used with card reader or other device, check that the device supports SDHC.

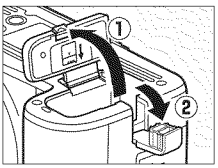
Other cards have not been tested. For more details on the above cards, please contact the manufacturer.

Attaching a Power Connector and AC Adapter

Turn the camera off before attaching an optional power connector and AC adapter.

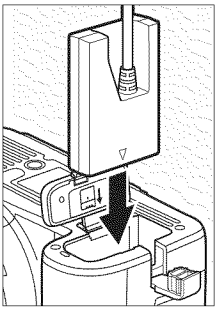
1 Ready the camera.

Open the battery-chamber (①) and power connector (②) covers.



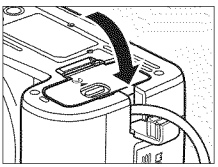
2 Insert the EP-5 power connector.

Be sure to insert the connector in the correct orientation.



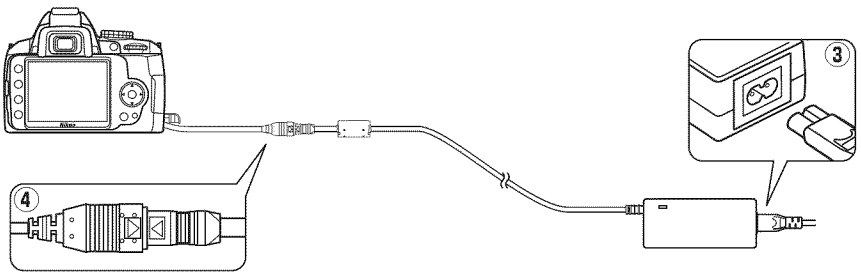
3 Close the battery-chamber cover.

Position the power connector cable so that it passes through the power connector slot and close the battery-chamber cover.



4 Connect the AC adapter.

Connect the AC adapter power cable to the AC socket on AC adapter (③) and the EP-5 power cable to the DC socket (④). A icon is displayed in the monitor when the camera is powered by the AC adapter and power connector.



Caring for the Camera

Storage

When the camera will not be used for an extended period, remove the battery and store it in a cool, dry area with the terminal cover in place. To prevent mold or mildew, store the camera in a dry, well-ventilated area. Do not store your camera with naphtha or camphor moth balls or in locations that:

- are poorly ventilated or subject to humidities of over 60%
- are next to equipment that produces strong electromagnetic fields, such as televisions or radios
- are exposed to temperatures above 50 °C (122 °F) or below –10 °C (14 °F)

Cleaning

Camera body	Use a blower to remove dust and lint, then wipe gently with a soft, dry cloth. After using the camera at the beach or seaside, wipe off sand or salt with a cloth lightly dampened in distilled water and dry thoroughly. **Important**: *Dust or other foreign matter inside the camera may cause damage not covered under warranty.*
Lens, mirror, and viewfinder	These glass elements are easily damaged. Remove dust and lint with a blower. If using an aerosol blower, keep the can vertical to prevent the discharge of liquid. To remove fingerprints and other stains, apply a small amount of lens cleaner to a soft cloth and clean with care.
Monitor	Remove dust and lint with a blower. When removing fingerprints and other stains, wipe the surface lightly with a soft cloth or chamois leather. Do not apply pressure, as this could result in damage or malfunction.

Do not use alcohol, thinner, or other volatile chemicals.

Servicing the Camera and Accessories

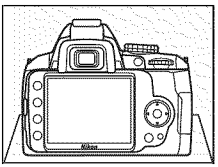
The camera is a precision device and requires regular servicing. Nikon recommends that the camera be inspected by the original retailer or Nikon service representative once every one to two years, and that it be serviced once every three to five years (note that fees apply to these services). Frequent inspection and servicing are particularly recommended if the camera is used professionally. Any accessories regularly used with the camera, such as lenses or optional Speedlights, should be included when the camera is inspected or serviced.

The Low-Pass Filter

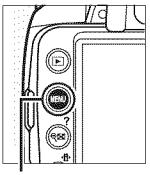
The image sensor that acts as the camera's picture element is fitted with a low-pass filter to prevent moiré. If you suspect that dirt or dust on the filter is appearing in photographs, you can clean the filter using the **Clean image sensor** option in the setup menu. The filter can be cleaned at any time using the **Clean now** option, or cleaning can be performed automatically when the camera is turned on or off.

■■ *"Clean Now"*

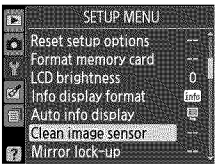
1 **Place the camera base down.**
Image sensor cleaning is most effective when the camera is placed base down as shown at right.



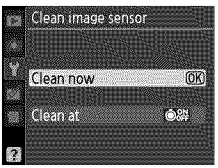
2 **Display the Clean image sensor menu.**
Press the MENU button to display the menus. Highlight **Clean image sensor** in the setup menu (📖 124) and press ▶.



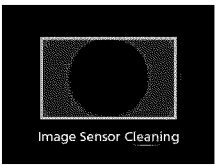
MENU *button*



3 **Select Clean now.**
Highlight **Clean now** and press ⓞⓚ.



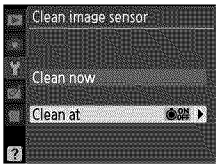
The message shown at right will be displayed while cleaning is in progress.



■ "Clean At"

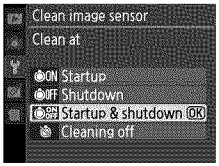
1 Select **Clean at.**

Display the **Clean image sensor** menu as described in Step 2 on the previous page. Highlight **Clean at** and press ▶.



2 Select an option.

Highlight one of the following options and press ⓞⓚ.



Option	Description
ON **Startup**	The image sensor is automatically cleaned each time the camera is turned on.
OFF **Shutdown**	The image sensor is automatically cleaned during shutdown each time the camera is turned off.
ON OFF **Startup & shutdown**	The image sensor is cleaned automatically at startup and at shutdown.
Cleaning off	Automatic image sensor cleaning off.

Image Sensor Cleaning

Using camera controls interrupts image sensor cleaning. Image sensor cleaning may not be performed at startup if the flash is charging.

Cleaning is performed by vibrating the low-pass filter. If dust can not be fully removed using the options in the **Clean image sensor** menu, clean the image sensor manually (🕮 172) or consult a Nikon-authorized service representative.

If image sensor cleaning is performed several times in succession, image sensor cleaning may be temporarily disabled to protect the camera's internal circuitry. Cleaning can be performed again after a short wait.

■■ *Manual Cleaning*

If foreign matter can not be removed from the low-pass filter using the **Clean image sensor** option in the setup menu (📖 170), the filter can be cleaned manually as described below. Note, however, that the filter is extremely delicate and easily damaged. Nikon recommends that the filter be cleaned only by Nikon-authorized service personnel.

1 **Charge the battery or connect an AC adapter.**

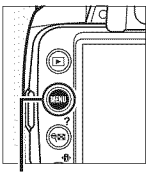
A reliable power source is required when inspecting or cleaning the low-pass filter. Turn the camera off and insert a fully-charged EN-EL9a battery or connect an optional EP-5 power connector and EH-5a AC adapter.

2 **Remove the lens.**

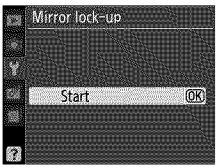
Turn the camera off and remove the lens.

3 **Select Mirror lock-up.**

Turn the camera on and press the MENU button to display the menus. Highlight **Mirror lock-up** in the setup menu and press ▶ (note that this option is not available at battery levels of ▭ or below).

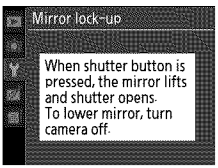


MENU *button*



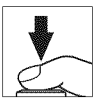
4 **Press ⓞⓚ.**

The message shown at right will be displayed in the monitor. To restore normal operation without inspecting the low-pass filter, turn the camera off.



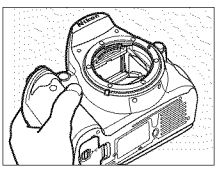
5 **Raise the mirror.**

Press the shutter-release button all the way down. The mirror will be raised and the shutter curtain will open, revealing the low-pass filter.

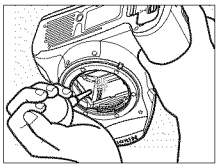


6 **Examine the low-pass filter.**

Holding the camera so that light falls on the low-pass filter, examine the filter for dust or lint. If no foreign objects are present, proceed to Step 8.



7 Clean the filter.



Remove any dust and lint from the filter with a blower. Do not use a blower-brush, as the bristles could damage the filter. Dirt that can not be removed with a blower can only be removed by Nikon-authorized service personnel. Under no circumstances should you touch or wipe the filter.

8 Turn the camera off.

The mirror will return to the down position and the shutter curtain will close. Replace the lens or body cap.

Use a Reliable Power Source

The shutter curtain is delicate and easily damaged. If the camera powers off while the mirror is raised, the curtain will close automatically. To prevent damage to the curtain, observe the following precautions:

- Do not turn the camera off or remove or disconnect the power source while the mirror is raised.
- If the battery runs low while the mirror is raised, a beep will sound and the self-timer lamp will blink to warn that the shutter curtain will close and the mirror will be lowered after about two minutes. End cleaning or inspection immediately.

Foreign Matter on the Low-Pass Filter

Nikon takes every possible precaution to prevent foreign matter from coming into contact with the low-pass filter during production and shipping. The D3000, however, is designed to be used with interchangeable lenses, and foreign matter may enter the camera when lenses are removed or exchanged. Once inside the camera, this foreign matter may adhere to the low-pass filter, where it may appear in photographs taken under certain conditions. To protect the camera when no lens is in place, be sure to replace the body cap provided with the camera, being careful to first remove all dust and other foreign matter that may be adhering to the body cap. Avoid exchanging lenses in dusty environments.

Should foreign matter find its way onto the low-pass filter, clean the filter as described above, or have the filter cleaned by authorized Nikon service personnel. Photographs affected by the presence of foreign matter on the filter can be retouched using Capture NX 2 (available separately; 📖 167) or the clean image options available in some third-party imaging applications.

Caring for the Camera and Battery: Cautions

Do not drop: The product may malfunction if subjected to strong shocks or vibration.

Keep dry: This product is not waterproof, and may malfunction if immersed in water or exposed to high levels of humidity. Rusting of the internal mechanism can cause irreparable damage.

Avoid sudden changes in temperature: Sudden changes in temperature, such as those that occur when entering or leaving a heated building on a cold day, can cause condensation inside the device. To prevent condensation, place the device in a carrying case or plastic bag before exposing it to sudden changes in temperature.

Keep away from strong magnetic fields: Do not use or store this device in the vicinity of equipment that generates strong electromagnetic radiation or magnetic fields. Strong static charges or the magnetic fields produced by equipment such as radio transmitters could interfere with the monitor, damage data stored on the memory card, or affect the product's internal circuitry.

Do not leave the lens pointed at the sun: Do not leave the lens pointed at the sun or other strong light source for an extended period. Intense light may cause the image sensor to deteriorate or produce a white blur effect in photographs.

Turn the product off before removing or disconnecting the power source: Do not unplug the product or remove the battery while the product is on or while images are being recorded or deleted. Forcibly cutting power in these circumstances could result in loss of data or in damage to product memory or internal circuitry. To prevent an accidental interruption of power, avoid carrying the product from one location to another while the AC adapter is connected.

Cleaning: When cleaning the camera body, use a blower to gently remove dust and lint, then wipe gently with a soft, dry cloth. After using the camera at the beach or seaside, wipe off any sand or salt using a cloth lightly dampened in pure water and then dry the camera thoroughly.

The lens and mirror are easily damaged. Dust and lint should be gently removed with a blower. When using an aerosol blower, keep the can vertical to prevent discharge of liquid. To remove fingerprints and other stains from the lens, apply a small amount of lens cleaner to a soft cloth and wipe the lens carefully.

See "The Low-Pass Filter" (🕮 170, 172) for information on cleaning the low-pass filter.

Lens contacts: Keep the lens contacts clean.

Do not touch the shutter curtain: The shutter curtain is extremely thin and easily damaged. Under no circumstances should you exert pressure on the curtain, poke it with cleaning tools, or subject it to powerful air currents from a blower. These actions could scratch, deform, or tear the curtain.

Storage: To prevent mold or mildew, store the camera in a dry, well-ventilated area. If the product will not be used for an extended period, remove the battery to prevent leakage and store the camera in a plastic bag containing a desiccant. Do not, however, store the camera case in a plastic bag, as this may cause the material to deteriorate. Note that desiccant gradually loses its capacity to absorb moisture and should be replaced at regular intervals.

To prevent mold or mildew, take the camera out of storage at least once a month. Turn the camera on and release the shutter a few times before putting it away.

Store the battery in a cool, dry place. Replace the terminal cover before putting the battery away.

Notes on the monitor: The monitor may contain a few pixels that are always lit or that do not light. This is common to all TFT LCD monitors and does not indicate a malfunction. Images recorded with the product are unaffected.

Images in the monitor may be difficult to see in a bright light.

Do not apply pressure to the monitor, as this could cause damage or malfunction. Dust or lint on the monitor can be removed with a blower. Stains can be removed by wiping lightly with a soft cloth or chamois leather. Should the monitor break, care should be taken to avoid injury from broken glass and to prevent liquid crystal from the monitor touching the skin or entering the eyes and mouth.

Moiré: Moiré is an interference pattern created by the interaction of an image containing a regular, repeating grid, such as the pattern of weave in cloth or windows in a building, with the camera image sensor grid. If you notice moiré in your photographs, try changing the distance to the subject, zooming in and out, or changing the angle between the subject and the camera.

Batteries: Dirt on the battery terminals can prevent the camera from functioning and should be removed with a soft, dry cloth before use.

Batteries may leak or explode if improperly handled. Observe the following precautions when handling batteries:

Turn the product off before replacing the battery.

The battery may become hot when used for extended periods. Observe due caution when handling the battery.

Use only batteries approved for use in this equipment.

Do not expose the battery to flame or excessive heat.

After removing the battery from the camera, be sure to replace the terminal cover.

Charge the battery before use. When taking photographs on important occasions, ready a spare EN-EL9a battery and keep it fully charged. Depending on your location, it may be difficult to purchase replacement batteries on short notice.

On cold days, the capacity of batteries tends to decrease. Be sure the battery is fully charged before taking photographs outside in cold weather. Keep a spare battery in a warm place and exchange the two as necessary. Once warmed, a cold battery may recover some of its charge.

Continuing to charge the battery after it is fully charged can impair battery performance.

Used batteries are a valuable resource. Please recycle used batteries in accord with local regulations.

Available Settings

The following table lists the settings that can be adjusted in each mode. Defaults can be restored with **Reset shooting options** (📖 119).

		AUTO								P	S	A	M
Shooting menu	Set Picture Control	—	—	—	—	—	—	—	—	✔	✔	✔	✔
	Image quality	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Image size	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	White balance	—	—	—	—	—	—	—	—	✔	✔	✔	✔
	ISO sensitivity settings	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Active D-Lighting	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Color space	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Noise reduction	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Release mode	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Focus mode	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	AF-area mode	✔[1]	✔[1]	✔[1]	✔[1]	✔[1]	✔[1]	✔[1]	✔[1]	✔	✔	✔	✔
	AF-assist	✔	✔	✔	—	✔	—	✔	✔	✔	✔	✔	✔
	Metering	—	—	—	—	—	—	—	—	✔	✔	✔	✔
	Built-in flash/Optional flash	—	—	—	—	—	—	—	—	✔	✔	✔	✔
Other settings	AE-L/AF-L button hold	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Flexible program	—	—	—	—	—	—	—	—	✔	—	—	—
	Exposure compensation	—	—	—	—	—	—	—	—	✔	✔	✔	✔
	Flash mode	✔[1]	—	✔[1]	—	✔[1]	—	✔[1]	✔[1]	✔	✔	✔	✔
	Flash compensation	—	—	—	—	—	—	—	—	✔	✔	✔	✔

1 Reset when mode dial is rotated to new setting.

Memory Card Capacity

The following table shows the approximate number of pictures that can be stored on a 4 GB Lexar Media Professional 133× card at different image quality and size settings.

Image quality	Image size	File size[1]	No. of images[1]	Buffer capacity[2]
NEF (RAW)+ JPEG basic[3]	L	9.8 MB	227	6
NEF (RAW)	—	8.6 MB	235	6
JPEG fine	L	4.7 MB	541	100
	M	2.7 MB	951	100
	S	1.3 MB	2000	100
JPEG normal	L	2.4 MB	1000	100
	M	1.4 MB	1800	100
	S	0.7 MB	3900	100
JPEG basic	L	1.3 MB	2000	100
	M	0.7 MB	3400	100
	S	0.4 MB	6900	100

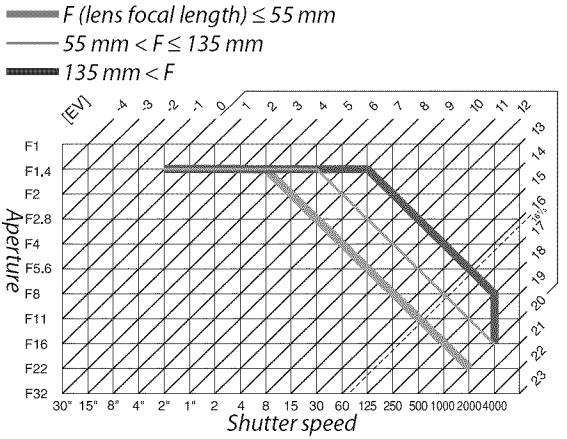
1 All figures are approximate. File size varies with scene recorded.

2 Maximum number of exposures that can be stored in memory buffer. Drops at ISO sensitivities over ISO 800 (🕮 62) or if **Noise reduction** (🕮 122) or Active D-Lighting (🕮 64) is on.

3 Image size applies to JPEG images only. Size of NEF (RAW) images can not be changed. File size is the total for NEF (RAW) and JPEG images.

Exposure Program

The exposure program for programmed auto is shown in the following graph:



The maximum and minimum values for EV vary with ISO sensitivity; the above graph assumes an ISO sensitivity of ISO 100 equivalent. When matrix metering is used, values over 16 1/3 EV are reduced to 16 1/3 EV.

Troubleshooting

If the camera fails to function as expected, check the list of common problems below before consulting your retailer or Nikon representative.

Display

Viewfinder is out of focus: Adjust viewfinder focus or use optional eyepiece correction lenses (📖 23, 166).

Viewfinder is dark: Insert a fully-charged battery (📖 15, 25).

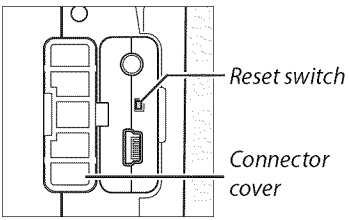
Displays turn off without warning: Choose longer delays for **Auto off timers** (📖 130).

Information display does not appear in monitor: Shutter-release button is pressed halfway. If information display does not appear when you remove your finger from shutter-release button, confirm that **On** is selected for **Auto info display** (📖 127) and that battery is charged.

Camera does not respond to controls: See "A Note on Electronically-Controlled Cameras," below.

Viewfinder display is unresponsive and dim: The response times and brightness of this display vary with temperature.

A Note on Electronically-Controlled Cameras



In extremely rare instances, unusual characters may appear in the monitor and the camera may stop functioning. In most cases, this phenomenon is caused by a strong external static charge. Turn the camera off, remove and replace the battery, taking care to avoid burns, and turn the camera on again, or, if you are using an AC adapter (available separately), disconnect and reconnect the adapter and turn the camera on again. If the problem persists, turn the camera off, open the connector cover and press the reset switch (this also resets the camera clock). Note that disconnecting the power source or pressing the reset switch may result in loss of any data not recorded to the memory card at the time the problem occurred. Data already recorded to the card will not be affected. In the event of continued malfunction, contact your retailer or Nikon-authorized service representative.

Shooting (All Modes)

Camera takes time to turn on: Delete files or folders.

Shutter-release disabled:
- Memory card is locked, full, or not inserted (📖 20, 22, 26).
- Built-in flash is charging (📖 29).
- Camera is not in focus (📖 28).
- CPU lens with aperture ring attached but aperture not locked at highest f-number (📖 157).
- Non-CPU lens is attached but camera is not in mode **M** (📖 159).

Final photo is larger than area shown in viewfinder: Viewfinder horizontal and vertical frame coverage is approximately 95%.

Photos are out of focus:
- AF-S or AF-I lens is not attached: use AF-S or AF-I lens or focus manually.
- Camera unable to focus using autofocus: use manual focus or focus lock (📖 46, 48).
- Camera is in manual focus mode: focus manually (📖 48).

Focus does not lock when shutter-release button is pressed halfway: Use **AE-L/AF-L** button to lock focus when **AF-C** focus mode is selected or when photographing moving subjects in **AF-A** mode.

Can not select focus point:
- [▬] **Auto-area** selected for AF-area mode: choose another mode (📖 44).
- Press shutter-release button halfway to turn monitor off or activate exposure meters (📖 26).

Can not select AF-area mode: Manual focus selected (📖 42).

Image size can not be changed: **Image quality** set to **NEF (RAW)** or **NEF (RAW)+JPEG basic** (📖 51).

Camera is slow to record photos: Turn noise reduction off (📖 122).

Randomly-spaced bright pixels ("noise") appear in photos:
- Choose lower ISO sensitivity or turn noise reduction on (📖 122).
- Shutter speed is slower than 8 s: use noise reduction (📖 122).

AF-assist illuminator does not light:
- Camera is in 🏔 or 🏃 mode (📖 30): select another mode.
- AF-assist lamp does not light for continuous-servo autofocus. Choose **AF-S**. In single-point, dynamic-area, or 3D-tracking AF, select center focus point (📖 46).
- **Off** selected for **AF-assist** (📖 122).
- Illuminator has turned off automatically. Illuminator may become hot with continued use; wait for lamp to cool down.

No photo taken when remote control shutter-release button is pressed:
- Replace battery in remote control (📖 167).
- Choose remote control mode (📖 53, 55).
- Flash is charging (📖 29).
- Time selected for **Remote on duration** has passed: reselect remote control mode (📖 131).
- Bright light is interfering with remote.

Smudges appear in photographs: Clean front and rear lens elements. If problem persists, perform image sensor cleaning (📖 170).

Date is not imprinted on photos: Image quality set to **NEF (RAW)** or **NEF+JPEG basic** (📖 51, 136).

Menu item can not be selected: Some options are not available in all modes.

Shooting (P, S, A, M)

Shutter-release disabled:
- Non-CPU lens is attached: rotate camera mode dial to **M** (📖 159).
- Mode dial rotated to **S** after shutter speed of "bulb" or "time" selected in mode **M**: choose new shutter speed (📖 69).

Full range of shutter speeds not available: Flash in use (📖 60).

Colors are unnatural:
- Adjust white balance to match light source (📖 80).
- Adjust **Set Picture Control** settings (📖 87).

Can not measure white balance: Subject is too dark or too bright (📖 84).

Image can not be selected as source for preset white balance: Image was not created with D3000 (📖 86).

Effects of Picture Control differ from image to image: **A** (auto) is selected for sharpening, contrast, or saturation. For consistent results over a series of photos, choose another setting (📖 89).

Can not adjust contrast for selected Picture Control: Active D-Lighting is on. Turn Active D-Lighting off before adjusting contrast (📖 64).

Metering can not be changed: Autoexposure lock is in effect (📖 75).

Exposure compensation can not be used: Choose mode **P**, **S**, or **A** (📖 76).

Only one shot taken each time shutter-release button is pressed in continuous shooting mode: Lower built-in flash (📖 54).

Reddish areas appear in photos or textures are uneven: Reddish areas and uneven textures may appear in long time-exposures. Turn noise reduction on when shooting at shutter speeds of "bulb" or "time" (📖 122).

Playback

Flashing areas, shooting data, or graphs appear on images: Press ▲ or ▼ to choose photo information displayed, or change settings for **Display mode** (🕮 92, 118).

NEF (RAW) image is not played back: Photo was taken at image quality of **NEF+JPEG basic** (🕮 51).

Some pictures are not displayed during playback: Select **All** for **Playback folder**. Note that **Current** is automatically selected after photograph is taken (🕮 117).

"Tall" (portrait) orientation photos are displayed in "wide" (landscape) orientation:
- Select **On** for **Rotate tall** (🕮 118).
- Photo was taken with **Off** selected for **Auto image rotation** (🕮 128).
- Camera orientation was changed while shutter-release button was pressed in continuous release mode or camera was pointed up or down when photo was taken (🕮 54).
- Photo is displayed in image review (🕮 118).

Can not delete picture:
- Picture is protected: remove protection (🕮 100).
- Memory card is locked (🕮 22).

Can not retouch picture: Photo can not be further edited with this camera (🕮 140).

Can not change print order:
- Memory card is full: delete pictures (🕮 26, 101).
- Memory card is locked (🕮 22).

Can not select photo for printing: Photo is in NEF (RAW) format. Create JPEG copy using **NEF (RAW) processing** or transfer to computer and print using supplied software or Capture NX 2 (🕮 105, 149).

Picture is not displayed on TV: Choose correct video mode (🕮 127).

Can not transfer photos to computer: OS not compatible with camera or transfer software. Use card reader to copy photos to computer (🕮 105).

NEF (RAW) photos not displayed in Capture NX 2: Update to latest version (🕮 167).

Image Dust Off option in Capture NX 2 does not have desired effect: Image sensor cleaning changes the position of dust on the low-pass filter. Dust off reference data recorded before image sensor cleaning is performed can not be used with photographs taken after image sensor cleaning is performed. Dust off reference data recorded after image sensor cleaning is performed can not be used with photographs taken before image sensor cleaning is performed (🕮 129).

Miscellaneous

Date of recording is not correct: Set camera clock (🕮 19, 127).

Menu item can not be selected: Some options are not available at certain combinations of settings or when no memory card is inserted (🕮 13, 20, 140).

Error Messages

This section lists the indicators and error messages that appear in the viewfinder and monitor.

> **Warning Icons**
> A flashing [?] in the monitor or [?] in the viewfinder indicates that a warning or error message can be displayed in the monitor by pressing the **?** (?) button.

Indicator		Solution	🕮
Monitor	**Viewfinder**		
Lock lens aperture ring at minimum aperture (largest f/-number).	FE E (blinks)	Set lens aperture ring to minimum aperture (largest f-number).	17, 158
Lens not attached.	F- -/[?] (blinks)	• Attach non-IX NIKKOR lens. • If non-CPU lens is attached, select mode **M**.	16 159
Shutter release disabled. Recharge battery.	(blinks)	Turn camera off and recharge or replace battery.	14, 15
This battery can not be used. Choose battery designated for use in this camera.		Use Nikon-approved battery (EN-EL9a).	166
Initialization error. Turn camera off and then on again.		Turn camera off, remove and replace battery, and then turn camera on again.	15, 25
Battery level is low. Complete operation and turn camera off immediately.	—	End cleaning and turn camera off and recharge or replace battery.	173
Clock not set.	—	Set camera clock.	19, 127
No memory card.	[-E-]	Turn camera off and confirm that card is correctly inserted.	20
Memory card is locked. Slide lock to "write" position.	CHA (blinks)	Memory card is locked (write protected). Slide card write-protect switch to "write" position.	22
This memory card cannot be used. Card may be damaged. Insert another card.	[CHA] (blinks)	• Use approved card. • Format card. If problem persists, card may be damaged. Contact Nikon-authorized service representative. • Error creating new folder. Delete files or insert new memory card. • Insert new memory card. • Eye-Fi card is still emitting wireless signal after **Disable** has been selected for **Eye-Fi upload**. To terminate wireless transmission, turn the camera off and remove the card.	167 21 33, 101 20 139

Indicator		Solution	🕮
Monitor	**Viewfinder**		
This card is not formatted. Format card?	F o r (blinks)	Format card or turn camera off and insert new memory card.	21
Card is full	F u L (blinks)	• Reduce quality or size. • Delete photographs. • Insert new memory card.	50 33, 101 20
—	● (blinks)	Camera can not focus using autofocus. Change composition or focus manually.	28, 42, 48
Subject is too bright.	H i	• Use a lower ISO sensitivity • Use commercial ND filter • In mode: **S** Increase shutter speed **A** Choose a smaller aperture (larger f-number)	62 — 69 70
Subject is too dark.	L o	• Use a higher ISO sensitivity • Use flash • In mode: **S** Lower shutter speed **A** Choose a larger aperture (smaller f-number)	62 58 69 70
No Bulb in S mode.	b u L b (blinks) - - (blinks)	Change shutter speed or select manual exposure mode.	69, 71
—	ϟ (blinks)	Flash has fired at full power. Check photo in monitor; if underexposed, adjust settings and try again.	—
Flash is in TTL mode. Choose another setting or use a CPU lens.		Change flash mode setting on optional flash unit or use CPU lens.	157
—	ϟ/? (blinks)	• Use the flash. • Change distance to subject, aperture, flash range, or ISO sensitivity. • Optional SB-400 flash unit attached: flash is in bounce position or focus distance is very short. Continue shooting; if necessary, increase focus distance to prevent shadows from appearing in photograph.	58 61, 62, 70 —
Flash error		Error occurred updating firmware for optional flash unit. Contact Nikon-authorized service representative.	—

Indicator		Solution	🕮
Monitor	Viewfinder		
Error. Press shutter release button again.	Err (blinks)	Release shutter. If error persists or appears frequently, consult Nikon-authorized service representative.	—
Start-up error. Contact a Nikon-authorized service representative.		Consult Nikon-authorized service representative.	—
Autoexposure error. Contact a Nikon-authorized service representative.			
Folder contains no images.	—	Folder selected for playback contains no images. Insert another memory card or select a different folder.	20, 117
File does not contain image data.	—	File has been created or modified using a computer or different make of camera, or file is corrupt.	141
Cannot select this file.			
No image for retouching.	—	Memory card does not contain NEF (RAW) images for use with **NEF (RAW) processing**.	149
Check printer.	—	Check printer. To resume, select **Continue** (if available).	—*
Check paper.	—	Paper is not selected size. Insert paper of correct size and select **Continue**.	—*
Paper jam.	—	Clear jam and select **Continue**.	—*
Out of paper.	—	Insert paper of selected size and select **Continue**.	—*
Check ink supply.	—	Check ink. To resume, select **Continue**.	—*
Out of ink.	—	Replace ink and select **Continue**.	—*

* See printer manual for more information.

Specifications

■■ *Nikon D3000 Digital Camera*

Type	
Type	Single-lens reflex digital camera
Lens mount	Nikon F mount (with AF contacts)
Effective picture angle	Approx. 1.5 × lens focal length (Nikon DX format)
Effective pixels	
Effective pixels	10.2 million
Image sensor	
Image sensor	23.6 × 15.8 mm CCD sensor
Total pixels	10.75 million
Dust-reduction System	Image sensor cleaning, Image Dust Off reference data (optional Capture NX 2 software required)
Storage	
Image size (pixels)	• 3,872 × 2,592 (L) • 2,896 × 1,944 (M) • 1,936 × 1,296 (S)
File format	• **NEF (RAW)** • **JPEG**: JPEG-Baseline compliant with fine (approx. 1 : 4), normal (approx. 1 : 8), or basic (approx. 1 : 16) compression • **NEF (RAW)+JPEG**: Single photograph recorded in both NEF (RAW) and JPEG formats
Picture Control System	Can be selected from Standard, Neutral, Vivid, Monochrome, Portrait, Landscape; selected Picture Control can be modified
Media	SD (Secure Digital) memory cards, SDHC-compliant
File system	DCF (**D**esign Rule for **C**amera **F**ile System) 2.0, DPOF (**D**igital **P**rint **O**rder **F**ormat), Exif 2.21 (**Ex**changeable **I**mage **F**ile Format for Digital Still Cameras), PictBridge
Viewfinder	
Viewfinder	Eye-level pentamirror single-lens reflex viewfinder
Frame coverage	Approx. 95% horizontal and 95% vertical
Magnification	Approx. 0.8 × (50 mm f/1.4 lens at infinity, –1.0 m^{-1})
Eyepoint	18 mm (–1.0 m^{-1})
Diopter adjustment	–1.7 – +0.5 m^{-1}
Focusing screen	Type B BriteView Clear Matte Mark V screen with focus frame (framing grid can be displayed)
Reflex mirror	Quick return
Lens aperture	Instant return, electronically controlled

Lens	
Compatible lenses	• **AF-S or AF-I**: All functions supported. • **Type G or D AF NIKKOR without built-in autofocus motor**: All functions except autofocus supported. IX NIKKOR lenses not supported. • **Other AF NIKKOR**: All functions supported except autofocus and 3D color matrix metering II. Lenses for F3AF not supported. • **Type D PC NIKKOR**: All functions supported except autofocus and some shooting modes. • **AI-P NIKKOR**: All functions supported except autofocus and 3D color matrix metering II. • **Non-CPU**: Autofocus not supported. Can be used in exposure mode **M**, but exposure meter does not function. Electronic rangefinder can be used if lens has a maximum aperture of f/5.6 or faster.
Shutter	
Type	Electronically-controlled vertical-travel focal-plane shutter
Speed	1/4000 – 30 s in steps of 1/3 EV, bulb, time (requires optional ML-L3 wireless remote control)
Flash sync speed	X=1/200 s; synchronizes with shutter at 1/200 s or slower
Release	
Release mode	S (single frame), CL (continuous), ⏲ (self-timer), **2s** (delayed remote), (quick-response remote)
Frame advance rate	Up to 3 fps (manual focus, mode **M** or **S**, shutter speed 1/250 s or faster, and other settings at default values)
Self-timer	Can be selected from 2, 5, 10, and 20 s duration
Exposure	
Metering	TTL exposure metering using 420-pixel RGB sensor
Metering method	• **Matrix**: 3D color matrix metering II (type G and D lenses); color matrix metering II (other CPU lenses) • **Center-weighted**: Weight of 75% given to 8-mm circle in center of frame • **Spot**: Meters 3.5-mm circle (about 2.5% of frame) centered on selected focus point
Range (ISO 100, f/1.4 lens, 20 °C/68 °F)	• **Matrix or center-weighted metering**: 0 – 20 EV • **Spot metering**: 2 – 20 EV
Exposure meter coupling	CPU
Mode	Auto modes (AUTO auto; auto (flash off)); scene modes (portrait; landscape; child; sports; close up; night portrait; programmed auto with flexible program (**P**); shutter-priority auto (**S**); aperture-priority auto (**A**); manual (**M**)
Exposure compensation	–5 – +5 EV in increments of 1/3 EV
Exposure lock	Luminosity locked at detected value with **AE-L/AF-L** button
ISO sensitivity (Recommended Exposure Index)	ISO 100 – 1600 in steps of 1 EV; can also be set to approx. 1 EV above ISO 1600 (ISO 3200 equivalent); auto ISO sensitivity control available
Active D-Lighting	Can be selected from On or Off

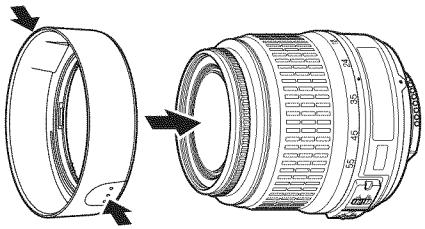
Focus	
Autofocus	Nikon Multi-CAM 1000 autofocus sensor module with TTL phase detection, 11 focus points (including one cross-type sensor), and AF-assist illuminator (range approx. 0.5–3 m/1 ft. 8 in.–9 ft. 10 in.)
Detection range	–1 – +19 EV (ISO 100, 20 °C/68 °F)
Lens servo	• **Autofocus (AF)**: Single-servo AF (**AF-S**); continuous-servo AF (**AF-C**); auto AF-S/AF-C selection (**AF-A**); predictive focus tracking activated automatically according to subject status • **Manual focus (MF)**: Electronic rangefinder can be used
Focus point	Can be selected from 11 focus points
AF-area mode	Single point, dynamic area, auto-area, 3D-tracking (11 points)
Focus lock	Focus can be locked by pressing shutter-release button halfway (single-servo AF) or by pressing **AE-L/AF-L** button
Flash	
Built-in flash	AUTO, , , , : Auto flash with auto pop-up **P**, **S**, **A**, **M**: Manual pop-up with button release
Guide Number	Approx. 12/39, 13/43 with manual flash (m/ft, ISO 100, 20 °C/68 °F)
Flash control	• **TTL**: i-TTL balanced fill-flash and standard i-TTL flash for digital SLR using 420-pixel RGB sensor are available with built-in flash and SB-900, SB-800, SB-600, or SB-400 (i-TTL balanced fill-flash is available when matrix or center-weighted metering is selected) • **Auto aperture**: Available with SB-900/SB-800 and CPU lens • **Non-TTL auto**: Supported flash units include SB-900, SB-800, SB-80DX, SB-28DX, SB-28, SB-27, and SB-22S • **Distance-priority manual**: Available with SB-900 and SB-800
Flash mode	• AUTO, , , : Auto, auto with red-eye reduction, off; fill-flash and red-eye reduction available with optional flash units • : Auto slow sync, auto slow sync with red-eye reduction, off; slow sync and slow sync with red-eye reduction available with optional flash units • , : Fill-flash and red-eye reduction available with optional flash units • **P**, **A**: Fill-flash, rear-curtain with slow sync, slow sync, slow sync with red-eye reduction, red-eye reduction • **S**, **M**: Fill-flash, rear-curtain sync, red-eye reduction
Flash compensation	–3 – +1 EV in increments of $^1/_3$ EV
Flash-ready indicator	Lights when built-in flash or optional flash unit such as SB-900, SB-800, SB-600, SB-400, SB-80DX, SB-28DX, or SB-50DX is fully charged; blinks for 3 s after flash is fired at full output
Accessory shoe	ISO 518 hot-shoe with sync and data contacts and safety lock
Nikon Creative Lighting System (CLS)	Advanced Wireless Lighting supported with SB-900, SB-800, or SU-800 as commander; Flash Color Information Communication supported with built-in flash and all CLS-compatible flash units
Sync terminal	AS-15 sync terminal adapter (available separately)
White balance	
White balance	Auto, incandescent, fluorescent (7 types), direct sunlight, flash, cloudy, shade, preset manual, all except preset manual with fine tuning.

Monitor	
Monitor	3-in., approx. 230k-dot TFT LCD with brightness adjustment
Playback	
Playback	Full-frame and thumbnail (4, 9, or 72 images or calendar) playback with playback zoom, playback of stop-motion movies created with D3000, slide show, histogram display, highlights, auto image rotation, and image comment (up to 36 characters)
Interface	
USB	Hi-Speed USB
Video output	Can be selected from NTSC and PAL
Supported languages	
Supported languages	Chinese (Simplified and Traditional), Danish, Dutch, English, Finnish, French, German, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish
Power source	
Battery	One rechargeable Li-ion EN-EL9a battery
AC adapter	EH-5a AC adapter; requires EP-5 power connector (available separately)
Tripod socket	
Tripod socket	1/4 in. (ISO 1222)
Dimensions/weight	
Dimensions (W × H × D)	Approx. 126 × 97 × 64 mm (5.0 × 3.8 × 2.5 in.)
Weight	Approx. 485 g (1 lb. 1.1 oz.) without battery, memory card, or body cap
Operating environment	
Temperature	0–40 °C (+32–104 °F)
Humidity	Less than 85% (no condensation)

- Unless otherwise stated, all figures are for a camera with a fully-charged battery operating at an ambient temperature of 20 °C (68 °F).
- Nikon reserves the right to change the specifications of the hardware and software described in this manual at any time and without prior notice. Nikon will not be held liable for damages that may result from any mistakes that this manual may contain.

MH-23 quick charger	
Rated input	AC 100–240 V (50/60 Hz)
Rated output	DC 8.4 V/900 mA
Supported batteries	Nikon EN-EL9a or EN-EL9 rechargeable Li-ion battery
Charging time	Approx. 1 hour and 40 minutes (EN-EL9a) or 1 hour and 30 minutes (EN-EL9) when battery is fully discharged
Operating temperature	0–40 °C (+32–104 °F)
Dimensions (W × H × D)	Approx. 82.5 × 28 × 65 mm (3.2 × 1.1 × 2.6 in.)
Length of cord	Approx. 1800 mm (5 ft. 11 in.)
Weight	Approx. 80 g (2.8 oz.), excluding power cable
EN-EL9a rechargeable Li-ion battery	
Type	Rechargeable lithium-ion battery
Rated capacity	7.2 V/1080 mAh
Dimensions (W × H × D)	Approx. 36 × 14 × 56 mm (1.4 × 0.6 × 2.2 in.)
Weight	Approx. 51 g (1.8 oz.), excluding terminal cover

AF-S DX NIKKOR 18–55mm f/3.5–5.6G VR lens	
Type	G-type AF-S DX Zoom-NIKKOR lens with built-in CPU and Nikon bayonet mount
Supported cameras	Nikon digital SLR cameras (DX format)
Focal length	18–55 mm
Maximum aperture	f/3.5–5.6
Construction	11 elements in 8 groups (including 1 aspherical element)
Picture angle	76 °–28 ° 50 ′
Focal length scale (mm)	18, 24, 35, 45, 55
Distance information	Output to camera
Zoom control	Zoom adjusted by rotating separate zoom ring
Focusing	Autofocus with Silent Wave Motor; manual focus
Vibration reduction	Lens-shift method using voice coil motors (VCMs)
Closest focus distance	0.28 m (11 in.) from focal plane mark (🕮 49) at all zoom settings
Diaphragm	Seven-blade diaphragm with rounded blades and fully automatic aperture
Aperture range	f/3.5–22 at 18 mm; f/5.6–36 at 55 mm
Metering	Maximum aperture
Attachment size	52 mm (P=0.75 mm)
Dimensions	Approx. 73 mm diameter × 79.5 mm/2.9 × 3.1 in. (from surface of bayonet mount to end of lens)
Weight	Approx. 265 g (9.3 oz.)
Lens hood	HB-45 (available separately; attaches as shown below)



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■■ *Supported Standards*

- **DCF Version 2.0**: The Design Rule for Camera File Systems (DCF) is a standard widely used in the digital camera industry to ensure compatibility among different makes of camera.
- **DPOF**: Digital Print Order Format (DPOF) is an industry-wide standard that allows pictures to be printed from print orders stored on the memory card.
- **Exif version 2.21**: The D3000 supports Exif (Exchangeable Image File Format for Digital Still Cameras) version 2.21, a standard in which information stored with photographs is used for optimal color reproduction when the images are output on Exif-compliant printers.
- **PictBridge**: A standard developed through cooperation with the digital camera and printer industries, allowing photographs to be output directly to a printer without first transferring them to a computer.

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Battery Life

The number of shots that can be taken with fully-charged batteries varies with the condition of the battery, temperature, and how the camera is used. Sample figures for EN-EL9a (1080 mAh) batteries are given below.

- **Single-frame release mode (CIPA standard [1])**: Approximately 550 shots
- **Continuous release mode (Nikon standard [2])**: Approximately 2000 shots

1 Measured at 23 °C/73.4 °F (±2 °C/3.6 °F) with an AF-S DX NIKKOR 18–55mm f/3.5–5.6G VR lens under the following test conditions: lens cycled from infinity to minimum range and one photograph taken at default settings once every 30 s; after photograph is taken, monitor is turned on for 4 s; tester waits for exposure meters to turn off after monitor is turned off; flash fired at full power once every other shot.

2 Measured at 20 °C/68 °F with an AF-S DX NIKKOR 18–55mm f/3.5–5.6G VR lens under the following test conditions: vibration reduction off, continuous release mode, focus mode set to **AF-C**, image quality set to JPEG basic, image size set to **M** (medium), white balance set to **AUTO**, ISO sensitivity set to ISO 100, shutter speed $^1/_{250}$ s, focus cycled from infinity to minimum range three times after shutter-release button has been pressed halfway for 3 s; six shots are then taken in succession and monitor turned on for 4 s and then turned off; cycle repeated once exposure meters have turned off.

The following can reduce battery life:

- Using the monitor for extended periods
- Keeping the shutter-release button pressed halfway
- Repeated autofocus operations
- Taking NEF (RAW) photographs
- Slow shutter speeds
- Using VR (vibration reduction) mode with VR lenses

To ensure that you get the most from rechargeable Nikon EN-EL9a batteries:

- Keep the battery contacts clean. Soiled contacts can reduce battery performance.
- Use batteries immediately after charging. Batteries will lose their charge if left unused.

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